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THE EFFECT OF THREE YEARS' ANTI-MOSQUITO WORK ON MALARIA INCIDENCE IN CALCUTTA

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I. History of Malaria in Calcutta

The history of malaria in Calcutta, so far as it could be gathered has been traced chronologically. Calcutta was malarious from very early times but prior to the establishment of the East India Company there are no reliable data. The early records of the Company show that Calcutta was found to be malarious from the very commencement of the British rule. There is a record of epidemic fever in Calcutta as early as 1690 A.D. in which about one third of the English inhabitants died. In 1899 the Health Officer of the Calcutta Corporation instituted anti-mosquito measures on a small scale to see whether any reduction could be made in the fever returns of Calcutta. In 1900 Rogers surveyed the country on the left bank of the Hugli to the north of Calcutta with special reference to prevalence of malaria. Two of the municipalities, Cossipore-Chitpur and Maniktola, which are now within the Calcutta Corporation, showed 13·2 and 11·2 as their respective spleen rates. In 1901 the Royal Society sent to India Drs. J. W. W. Stephens and S. R. (now Sir Rickard) Christophers as members of the Malaria Commission. They examined a very small number of children, 191 in all, and none of them were found to have enlarged spleen or to have malaria parasites in their blood. The following extracts from an important paper by Rogers in 1906 will be found interesting:—

"With regard to cases coming from Calcutta itself some may doubtless have contracted the disease elsewhere and suffered from a relapse while subsequently living in Calcutta, but the histories of a considerable number of them point very definitely to their having first got the disease

while actually residing in the town. Among such cases are a number of sailors who had not previously suffered from malaria, but who contracted the disease within a few weeks of coming to this port in the malaria season, which will not be surprising to any one, who knows the state of Kidderpore docks and its surroundings. Again, several nurses of the General Hospital contracted the disease for the first time while living in quarters within the hospital compounds, and other similar undoubted cases of first infection by malaria might be given. Again, the disease very often attacks persons from parts of Australia which are free from malaria, but who are residing in Garden Reach in connection with the trade of importing horses. Yet the examination of blood films from a large number of healthy children in various parts of Calcutta, including both Kidderpore and Garden Reach, made by Captain Megaw, I. M. S. and myself during the last two years have confirmed the fact pointed out by the Malaria Commission that the so called 'endemic index of malaria' of Calcutta is nil, and that inspite of our examination having been made at the height of the malaria season in the month of November, instead of the hot weather or early rains as in the previous observations It is clear then that 'an endemic index of malaria' of nil is not an evidence that malaria is absent from a place, although, doubtless, it may mean that the place is not an extremely malarious one, although Garden Reach appears to be an exception even to this modified rule; for the disease has been so rife among the police as to call for a special investigation last year, while in the present year (1905) only 3 out of 18 police stationed there have escaped the disease." In 1907 Megaw published an important paper analysing the result of one year's blood examination made at the Out-Patients' Department of the Medical College Hospital. The writer states "most careful enquiries were directed to ascertain the probable locality in which the infection has been contracted, and after eliminating all doubtful cases there remain numerous instances in which the infection was undoubtedly acquired in Calcutta, many of the patients never having been away from the neighbourhood of Bowbazar, all their lives. Out of 340 cases with malaria parasites in blood, 165 were supposed to have contracted the infection in Calcutta and its suburbs, while the rest contracted the infection in moffussil." In 1911, at the second meeting of the General Malaria Committee held at Bombay, Dr. K. C. (afterwards Sir Koilas) Bose made the following remarks:

"Calcutta has at present in the Burra Bazar a District that is very bad with malaria cases. There is not a single house where ten cases could not be seen, and the cases are all of the tertian type. There are a few cases of malignant tertian..... In trying to find out the breeding places of the carriers in the neighbourhood, the speaker was surprised to find anopheline larvae in cocoanut shells in the houses."

In 1920 Iyenger published an account of investigations on malaria in Calcutta. The following extract made by Covell from that paper is reproduced:

"During recent years medical men in Calcutta have observed that malaria is to some extent prevalent in the city, and the people who never left Calcutta have contracted a virulent type of malaria. Many medical men believe that malaria has been increasing during the last few years, and malarial fever is certainly very common in the suburbs at present, though the spleen index is low." He noted that the splenic index in parts of Tollygunge was from 4—10 p.c., averaging 5 p.c., in Kidderpore 2 p.c., in Sibpur 2 p.c. and in Entally nil. He showed that *A. stephensi*, the notorious malaria-carrier of Bombay, Madras and many other cities of India, was very prevalent in Calcutta, and was breeding in large numbers throughout the city. "So long as present conditions are allowed to exist, Calcutta runs the risk, sooner or later, of being overrun by malaria. The city is developing rapidly, and this development is leading on the one hand to the increase of the potential breeding places for *A. stephensi* in all directions, and on the other to the influx of workers from many places, a proportion of whom are almost certain to be already infected with malaria. If this sort of thing continues, we may suddenly find, as the result of an epidemic of malaria, as they did in Bombay a few years ago, that Calcutta has become malarious before any one is aware of the fact. Two points require to be emphasized; firstly, a more complete mosquito-survey of Calcutta is essential, and secondly, necessary measures for the control of *A. stephensi* breeding in Calcutta should be carried out, supported by adequate legal power."

In 1923 De made the following statement in his paper, "There occur plenty of cases of malarial fevers in Calcutta every year. We concede that certain percentage of the total is imported, but it is difficult to escape the conclusion that a very large percentage is certainly due to local infection.

From 1928 to 1932 Basu made a mosquito survey in a small area in the central part of Calcutta and found *A. stephensi* larvae in a large number of breeding places including masonry-cisterns, iron-cisterns, wooden barrels, earthen vessels, tubes, kerosene tins, tin mugs, frying pans, tea-pots, cups, motor mud-guards etc., etc. Out of 11,927 examinations during four years no less than 33% gave positive results.

In 1934 Knowles and Basu published the results of the above mentioned survey, giving four instances of malaria undoubtedly contracted in the city itself. With regard to *A. stephensi* and malaria they wrote:—"(i) *A. stephensi*, a notorious malaria-carrier pullulating in almost every other receptacle for water storage in Calcutta city. (ii) Malaria infection *en masse* is constantly being imported into Calcutta city with immigrants from endemic areas in Bengal and by visitors to such areas". They also confirm that the Calcutta strain of *A. stephensi* is capable of transmitting malaria and the climatic conditions in Calcutta are suitable for malaria transmission.

The report of the Health Officer for the last twenty years show that malaria occurred chiefly in southern and south eastern wards of the city though sometimes some of the central wards *e.g.*, Ward XI appeared in the list of malarious wards. Spleen reports of some wards were given in some annual reports of Health Officers, but no systematic spleen rate of all the wards was ever taken. The spleen rate was reported to be 6·8 p.c. in Ward XX in 1915, 1·26 p.c. in Ward XIX, 2 p.c. in Ward XXI and 2·5 p.c. in Ward XXIV in 1916. After 1920 spleen rate was not recorded.

2. Col. Covell's Malaria Survey of 1932

In December, 1931, the problem of malaria in Calcutta was discussed at a meeting of the malaria sub-committee of the Conference of Medical Research Workers and a resolution was passed recommending an enquiry to be undertaken by an officer of the Malaria Survey of India. Subsequently, at the request of the Government of Bengal, Col. G. Covell I.M.S., the then Assistant Director, Malaria Survey of India, agreed to undertake an investigation of one month's duration in January, 1932. He examined altogether 8,945 children for enlarged spleen and the blood of 3,294 of these was examined for detection of malaria parasites. The total number of children found to have enlarged spleen was 322 (roughly 4 p.c. of those examined) and of these 167 were considered to have certainly acquired the infection outside Calcutta. Of the remainder, it was considered the majority of them were probably locally infected, though it was impossible to obtain a reliable history in some cases. The total number of blood films found to contain malaria parasites was 85 (2·6 p.c. of those examined). Of these again, 68 or 80 p.c. were malignant tertian infections, and the remainder benign tertian.

As regards local transmission, Col. Covell writes "Taking all the available evidence into consideration, it is clear that although endemic malaria in Calcutta generally is very slight in amount, there is an appreciable amount of local transmission of the disease, originating chiefly from cases imported from outside,....."

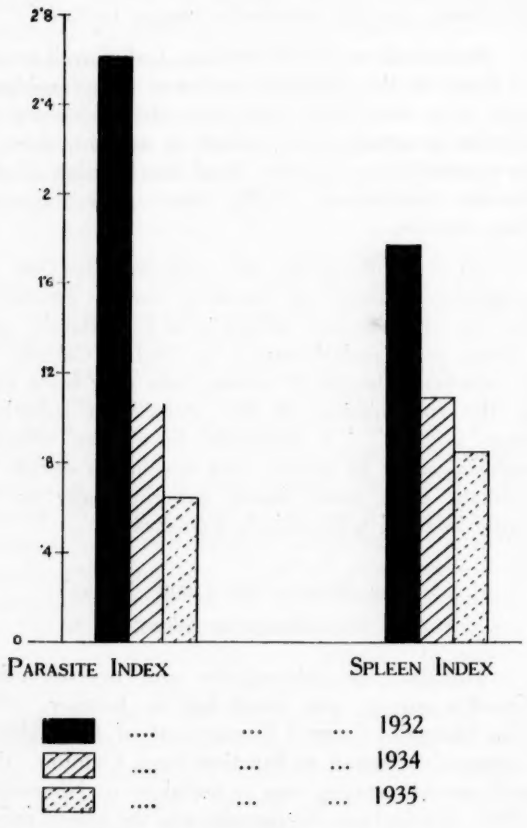
After enumerating the different species of anophelines found in Calcutta, Covell concludes that the only species "which is to be seriously considered as a malaria-carrier in central Calcutta is *A. stephensi* though *A. varuna* may play some part in the transmission of the disease in suburban areas ....." "*A stephensi* is a very efficient malaria-carrier in nature, and specimens caught in Calcutta have been found experimentally to be easily infected with malaria parasites."

3. The Effect of Three Years' Anti-Mosquito Work

(*a*) *Effect on spleen-index and parasite-index.* Covell's survey was concluded in January, 1932. The Mosquito Control Department of the Calcutta Corporation began to function from October, 1932 and another survey was undertaken in November, 1934. To find out the parasite and the spleen-index, the municipal school children were again examined as was done by Col. Covell. 3,004 school children were examined in all, those between the ages of 6 and 10 years having been selected, and those

suspected to have contracted malaria from outside having been excluded. In the border wards it was found that many children residing in the neighbouring municipalities attend the free primary schools of the Calcutta Corporation. These municipalities are undoubtedly more malarious than Calcutta and a large proportion of children residing in them have enlarged spleen. Each child was questioned as regards (a) the length of his residence in Calcutta and (b) the length of his residence in that particular ward. As far as possible, these factors were taken into consideration in calculating spleen-index.

Out of 3,004 children examined, 35 were found to have enlarged spleen and 31 were found to have malaria parasites in peripheral blood (thick film), *i.e.*



the spleen index was 1·17 and parasite index 1·03 but in 1932 the former was 1·17 and the latter was 2·6. All children suspected to have contracted the infection from outside were carefully excluded. From the comparative table embodying the results of the present observation together with those of Col. Covell, it will be seen that both the spleen and the parasite indices have gone down.

In comparing Col. Covell's observations in 1932 with those of the Calcutta Corporation Mosquito Control Department in 1934 it must be remembered that the former was carried out in January and the latter in November, which is the month of maximum malarial morbidity. During the Puja holidays in October, a large number of people go from the city to the villages and bring malaria with them to Calcutta, and with a large number of *A. stephensi* round about them they act as foci of infection; also many people from malarious villages come to Calcutta during the Puja holidays and spread the disease.

In November 1935, the same procedure as recommended by Col. Covell was adopted and the municipal school children were again examined to find out the parasite and the spleen index of the city. 2,957 school-children were examined in all, those between the ages of 6 and 10 years having been selected, and those suspected to have contracted malaria from outside having been excluded. Each child was questioned as regards (a) the length of his residence in Calcutta and (b) the length of his residence in that particular ward. As far as possible, these factors were taken into consideration in calculating splenic index. Out of a total of 2,957 children examined 25 were found with enlarged spleen, the enlargement being very small in most of the cases; and 19 were found to have malaria parasites in their peripheral blood (thick film) *i.e.*, the spleen index was ·84 and the parasite index ·64. In 1934 they were 1·17 and 1·03 respectively while in 1932 they were 1·73 and 2·6 respectively.

This reduction was made by suitable anti-mosquito measures when malaria was supposed to be on its upward grade as predicted by Col. Covell in his book on "Malaria in Calcutta" where he says "It appears probable that the incidence of malaria in Calcutta decreased from 1925 to 1930 and that it is now (1932) on the upward grade."

The following technique was followed in examining the children:—

(i) Spleen examination.—Children were examined standing and only spleen that could be felt with

certainty was recorded as enlarged. Most of the enlarged spleens were only just palpable. So Christopher's notations were not used. In a few cases the spleen was found considerably enlarged and on subsequent investigation it transpired that they had come from malarious places.

(ii) Blood examination.—After examining for enlarged spleen the tip of the finger was pricked with Hagedorn needle and a thin and a thick film of blood was taken on the same slide. The slide was brought to the laboratory and stained by Giemsa solution for 30 minutes according to Sinton's method (1 drop to 2 c.c. of distilled water). Enumeration of parasites by Sinton's fowl-cell method was not attempted as the number of parasites was very small.

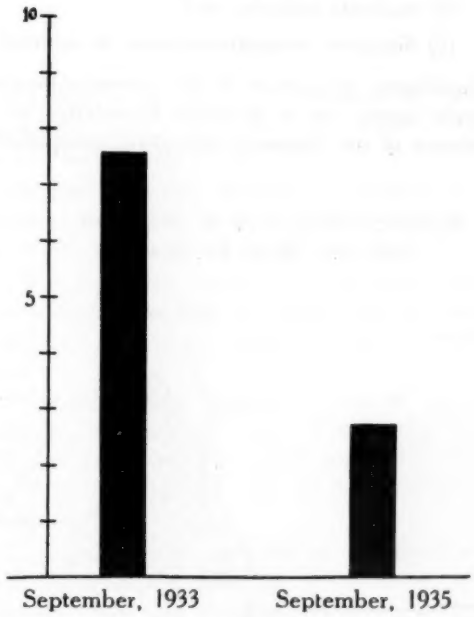
(iii) Recording of results.—Blank forms with columns for serial number of the child, name, age, sex, residence in ward no., period of residence, spleen, blood film no., etc., were supplied to each examiner, most of whom were qualified doctors. Each glass slide was numbered so that there was no possibility of confusion. Under the heading—remark—any other important fact was recorded *e.g.*, if a child was away from Calcutta or if the enlargement of the spleen could be attributed to any other cause on clinical ground. It might be pointed out in this connection that local cases of Kala-azar are practically non-existent in Calcutta except on its eastern border where also it is diminishing.

(b) *Effect on A. stephensi.*—Following Col. Covell's recommendations, the Mosquito Control Department of the Calcutta Corporation, with the limited resources at its command, laid special stress on *A. stephensi* rather than on other nuisance producing mosquitoes. In his book on "Malaria in Calcutta" Col. Covell wrote as follows. "The only malaria-carrying mosquito which is to be feared in Calcutta is *A. stephensi,* which breeds epecially in cisterns and other receptacles for storing water, garden tubs, fountain basins, *etc*..... It is therefore strongly urged that the efforts of the anti-mosquito organisation be directed in the first place against the breeding places of these two species (*A. stephensi* and *Aedes aegypti* the latter transmitting dengue) of mosquitoes..... If the efforts of the organisation at its present budgetted strength are to be directed against all mosquitoes indiscriminately, there is a great probability that its efforts will be wasted, and that it will fall into disrepute."

The iron-cisterns for storing water are the biggest sources of *stephensi* breeding, they being responsible for about 67% of the total breeding (see chart). The reduction in the percentage of cisterns infected with *stephensi* larvae will be evident from the following figures:—

In September 1933 a large number of unfiltered water cisterns of all the wards of the city were examined with a view to determine the amount of *A. stephensi* breeding going on in Calcutta. 7·6% of the cisterns were found infected with *A. stephensi*

PERCENTAGE OF CISTERNS INFECTED WITH A. STEPHENSI LARVAE



larvae.* After two years of continuous work another similar survey was done in September 1935 and it was found that 2·47 p.c. of the cisterns were infected showing a reduction of more than 66%.

* As a result of a survey carried out by me (A. C. G.) and published in the Records of Malaria Survey of India, September, 1935 it was shown that in certain wards of Calcutta about 24 per cent. of the cisterns were infected with *A. stephensi* larvae but this is not true of the city as a whole.

Unfortunately there is no record for 1932 as the laboratory was not fully equipped then.

It must be pointed out that this result was achieved by weekly inspection and oiling. This, however, is not the ideal method and in the absence of any permanent measure the old condition will reappear whenever the work will be slackened. The Corporation has recently framed bye-laws for rendering the cisterns mosquito-proof and this, if properly carried out, will be a great step towards *stephensi* eradication.

4. Anti-Mosquito Measures

Anti-mosquito measures are carried out by the Mosquito Control Department with a view to

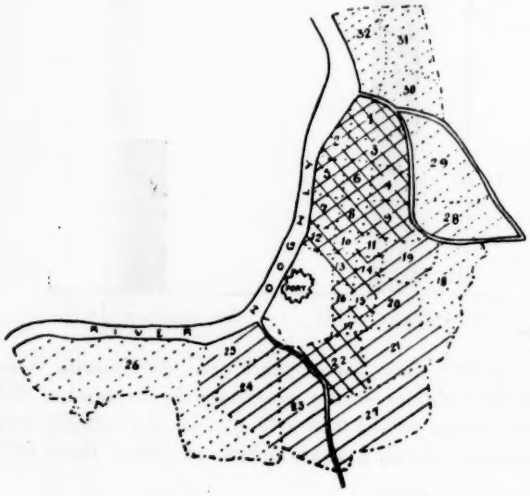
(i) eradicate malaria, and

(ii) diminish mosquito nuisance in general.

Intelligent application of anti-mosquito measures depends largely on a thorough knowledge of the life-history of the disease-transmitting mosquitoes of the locality. So far as malaria is concerned there are only three transmitting species in Calcutta, *viz.*, *A. stephensi*, *A. sundaicus* (ludlowii) and *A. varuna*. *A. stephensi* is numerically much more prevalent and is by far the most important transmitting species at present. Its distribution corresponds more or less to the sewered area of the city and it is most prevalent in the central wards. Unfiltered and filtered water cisterns are the most important sources of *A. stephensi* breeding. *A. sundaicus* (ludlowii) is confined to the eastern part of the city at present. It breeds in tanks. It is believed to have been recently introduced into the city and is a source of danger, as it is one of the most efficient malaria carriers known. It has often been responsible for virulent outbreaks of malaria as at Budge Budge in 1931 and at Port Swettenham in Federated Malaya States in 1901.

With the silting up of the river Bidyadhari, the Salt lakes in recent years have become non-tidal and therefore suitable for the breeding of *A. sundaicus* (ludlowii). This species was responsible

Showing Intensity of A. Stephensi Breeding, Ward by Ward.

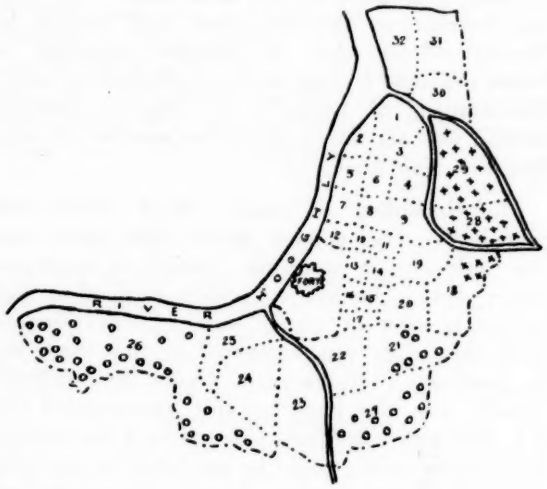


... Intense amount of Stephensi Breeding

... Moderate amount of ,, ,,

... Very Small amount of ,, ,,

Showing Distribution of A. Sundaicus and A. Varuna



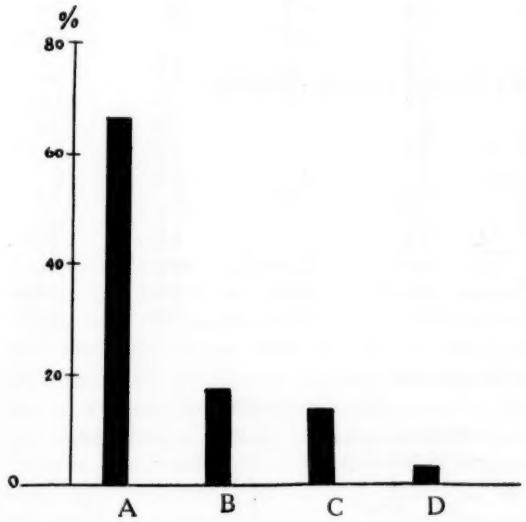
... A. Sundaicus is found in large number

... A. Varuna is ,, ,, ,,

for an outbreak of malaria in Ward 28 in July 1933. *A. varuna* is mainly found in tanks in southern and south-eastern portion of the city. The activities of the Calcutta Improvement Trust have urbanized large tracts of suburban wards and filled up a large number of old tanks which were breeding *A. varuna*. This species was also breeding in large numbers in Ward 26 which has become a separate municipality known as the Garden Reach Municipality since April, 1935. These two factors have lessened the importance of *A. varuna* as a malaria-carrier at least so far as the city of Calcutta is concerned.

Measures for diminishing existing malaria, were directed against *A. stephensi*, which according to the present investigation, forms more than 92% of the malaria transmitting species. *A. stephensi* breeds

A. STEPHENSI BREEDING IN DIFFERENT TYPES OF WATER COLLECTIONS



A ... ... Iron Cistern
B ... Masonary Cistern
C ... Temporary Water Collection
D ... ... Miscellaneous

mainly in overhead cisterns which are responsible for about 67% of the total number of breeding places. The masonary cisterns are next in order of importance, being responsible for about 17%. All the cisterns were inspected once a week and if any mosquito larvae were present they were oiled or emptied. For destroying adult mosquitoes people were instructed to use insecticide sprays like 'Flit' etc., and in suitable eases the department supplied it. Each ward was divided into one, two or three units according to its size and density of population. Each unit was placed in charge of a Sub-Inspector. All the breeding places were inspected and if necessary treated once a week. The unit was divided into six blocks, the first was finished on Monday, the second on Tuesday and so on till the whole was finished by Saturday, Sunday being reserved for special work *e.g.*, tank cleaning, jungle clearing etc.

The other two malaria transmitting species of Calcutta are tank breeders and whenever they were detected Paris-greening was done.

SUMMARY

(1) Malaria has distinctly decreased in Calcutta. The spleen index in 1932 was 1·73, while in 1934 it was 1·17 and in 1935 it was 0·84.

(2) Similarly, the decrease in malaria is also proved by the parasite-index, which was 2·6 in 1932 and 1·03 in 1934 and 0·64 in 1935.

(3) *A. stephensi*, the principal carrier of Calcutta, shows a distinct decrease as is shown by the decrease in the p.c. of cisterns infected with *A. stephensi* larvae.

(4) *A. sundaicus* (ludlowii) "one of the most efficient malaria carriers" now occupies the eastern portion of the city in the neighbourhood of the Salt lakes and, if unchecked, may be a source of great danger.

(5) Owing to the separation of the Garden Reach Municipality and the urbanization of the suburban wards the importance of *A. varuna* in Calcutta as a malaria-carrier has been considerably diminished.

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Our thanks are due to Dr. L. M. Biswas, Health Officer, and K. L. Chowdhury, Mosquito Control Officer, Calcutta Corporation for their kind permission to publish the paper and for valuable suggestions and encouragement.

Result of Malaria Survey of Calcutta in 1935 and its Comparison with Malaria Surveys in Previous Years

Ward No.	No. of children examined	No. showing enlarged spleen	Spleen index	No. showing m.p. in blood	Parasite index	Survey of 1934 Spleen per cent.	Survey of 1934 Parasite per cent.	Major Survey in 1932 Spleen per cent.	Major Survey in 1932 parasite per cent.	Covell's parasite per cent.
1.	100	1	1·0	0	0	1·4	0	2·2	0	
2.	90	1	1·1	1	1·1	2·0	0	3·0	0	
3.	129	2	1·5	1	0·8	1·1	0·3	1·8	0	
4.	91	1	1·1	1	1·1	0·8	1·6	2·7	1·0	
5.	106	1	0·9	1	0·9	—	—	2·0	3·0	
6.	116	2	1·7	2	1·7	—	—	1·6	0	
7.	72	1	1·4	0	0	0	0·9	1·0	2·0	
8.	100	1	1·0	1	1·0	1·0	1·0	1·0	5·0	
9.	99	1	1·0	0	0·9	0	0·9	0·7	3·0	
10.	104	0	0	1	0	2·7	0·9	1·5	4·0	
11.	101	1	1·0	0	0	1·5	0·8	1·0	2·0	
12.										
13.	90	0	0	0	0	2·7	0	2·2	7·4	
14.	100	2	2·0	1	1·0	1·8	1·8	3·3	4·0	
15.	43	1	2·3	0	0	5·0	10·0	2·5	15·0	
16.										
17.										
18.	119	1	0·9	1	0·9	2·5	2·5	2·0	2·0	
19.	80	1	1·2	0	0	1·2	1·2	0·7	2·0	
20.	106	0	0	0	0	1·2	0	1·4	2·0	
21.	100	1	1·0	1	1·0	2·4	2·4	3·8	8·0	
22.	101	0	0	0	0	0·5	1·1	1·5	1·0	
23.	108	1	0·9	0	0	0	2·5	1·0	2·0	
24.	134	1	0·7	1	0·7	1·6	0	3·0	0	
25.	105	0	0	0	0	0	0	1·0	0	
27.	231	2	0·8	3	1·3	1·2	2·4	0	7·0	
28.	96	1	1·0	1	1·0	0·9	1·7	2·5	4·0	
29.	97	1	1·0	0	0	1·9	0	1·8	1·0	
30.	94	1	1·0	2	2·1	0	0	1·1	3·0	
31.	111	0	0	0	0	0	1·2	2·0	2·0	
32.	134	0	0	1	0·7	0	1·5	1·4	3·0	

Result of the Last Three Surveys

	1932	1934	1935
Total No. of children examined	8945 for spleen 3294 for m.p.	3,004	2,957
Percentage with enlarged spleen ...	1·73	1·17	0·84
Percentage with m.p. in blood ...	2·60	1·03	0·64

REFERENCES

1. Basu, B. B. (1930).—"The Anopheles stephensi Problem in Calcutta" *Indian Medical Gazette*, LXV, 4, pp. 121—138.
2. Bose, K. C. (1911).—"Proceedings of Imperial Malaria Committee held in Bombay on 16th. and 17th. November, 1911"—Paludism, IV pp. 73—74.
3. Brahmachari, B. B. (1909).—"Campaign against Malarial Fever in Cossipore-Chitpur Municipality." —*Calcutta Medical Journal* III, pp. 312—322.
4. Cook, H. N. (1900).- "Report of the Health Officer of Calcutta for 1899."—Corporation Press, Calcutta.
5. Covell, G. (1928).—"Malaria in Bombay, 1928"—Government Press, Bombay.
6. Covell, G. (1932).—"Malaria in Calcutta"—Bengal Secretariat Book Depot.
7. Crake, H. M. (1912-23).—"Annual Report of Health Officers, Calcutta."—Corporation Press, Calcutta.
8. De, S. N. (1923).—"Anopheles Survey and Malaria Fever in Calcutta."—*Indian Medical Record*, XLIII, 4, pp. 86—89.
9. Fry, H. B. (1912).—"First Report on Malaria in Bengal."—Bengal Secretariat Book Depot, Calcutta.

10. GANGULI, A. C. (1935).—"Observations on Malaria-carrying Mosquitoes of Calcutta."—Records of Malaria Survey of India, September, 1935.
11. IYENGER, M. O. T. (1928).—"Report on the Malaria Survey of the Environs of Calcutta."—Bengal Secretariat Book Depot, Calcutta.
12. IYENGER, M. O. T. (1931).—"Report on a malaria Survey of Lothian Albion and Orient Jute Mills in Budge-Budge."—Government of Bengal No. 647 M dated 15th January.
13. KNOWLES, R. & BASU, B. C.—"Mosquito Prevalence and Mosquito Borne Diseases in Calcutta City."—Records of Malaria Survey of India, September, 1934.
14. MAJUDMDAR, T. N.—"Annual Report of the Health Officer of Calcutta for the year 1929—1932.
15. MEGAW, J. W. D. (1906-1907).—"A Year's Experience of Malaria at the Out-Patients' Department of the Medical College Hospital, Calcutta."—*Indian Medical Gazette*, XLI, 12, pp. 495—496 and XLII, 1, pp. 10—13.
16. ROGERS, L. (1900).—"Abstract of a Paper on the Relationship of Drinking Water, Water-logging and Distribution of Anopheles mosquitoes respectively to the Prevalence of Malaria north of Calcutta."—*Indian Medical Gazette*, XXXV, 9 pp. 343—349.
17. ROGERS.—"Malarial Fevers Among Europeans in Calcutta and their differentiation from seven day Influenza like fever."—*Indian Medical Gazette*, XLI, 3, pp. 81—89.
18. SENIOR WHITE, R.—"Three Years Mosquito Control Work in Calcutta."—Bulletin of Entomological Research Vol. XXV, part 4, December 1934.
19. STEPHENS, J. W. W. & CHRISTOPHER, S. R. (1902).—"Report to the Malaria Committee of the Royal Society, 6th Series, Harrison & Sons, London.

SOME MISCONCEPTIONS ABOUT MENTAL DISEASES

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To the vast majority of medical men and women the subject of mental disease is something distasteful if not positively revolting. In this respect they share the views held by the general public, who generally visualize a mental patient as some one of a dangerous character and more of a ferocious beast than a human being. Nowadays most subjects are freely discussed in the newspapers, even sex problems and birth control but mental disorders are completely ignored. The fact is that people shut their minds tightly against this subject and treat it as a sort of hidden plague. When a person suffers from a physical illness of any kind he receives sympathy in a generous measure from all those around him. But if he has the misfortune to fall a prey to mental disease his friends recoil in horror and whisper of the awful fate that is said to have befallen him. He becomes as good as dead, and though resurrected, may never dare to take his place again; or if he does, he is almost certain to feel the altered attitude of his friends. Nothing can be further from reality than this alarming and dismal picture, which lives in the popular imagination, for insanity is a recoverable illness and, even in cases where the treatment has been by no means ideal, the percentage of those who recover is high. There is, moreover, nothing in the behaviour of the insane that cannot be seen on occasions in the sane. States of excitement and over-activity, despair and rage are all experienced at times by those who are perfectly sane.

There appear to be three great reasons for this harsh attitude. These are an unreasonable fear, a fixed idea that mental disease is quite incurable, and a belief that insanity is invariably a family or hereditary malady.

The first reaction of the public towards mental disease is certainly one of fear if not of definite horror. The insane person is one of whom to be afraid, one who is dangerous and who must be prevented from doing physical violence to others.

It will doubtless surprise many to learn, and it is no overstatement to say, that in nearly every case the very reverse obtains. The insane person is usually himself afraid and often indeed suffers agonising terror; it can easily be understood, therefore, that while he may do harm to himself, it is very rarely, almost never, that he tries to harm others unless he is teased or provoked by them. It seems, indeed that actual physical fear of the insane person is the chief reason for his being so shunned, neglected and illtreated. He rarely receives treatment in the early stages of his illness, and hardly ever sees an expert until the disease is fully developed and he has been admitted into a mental hospital. As a result of this attitude towards mental disease the general public takes no interest in mental patients. While vast sums can be collected for general hospitals or special institutions, for tuberculosis for instance, the mental hospitals have to be maintained entirely at Government expense. The active fear of the insane also accounts in part for the apprehension which many people have of becoming insane themselves. There is a sort of terror of the unknown and mysterious disease. The strain of mental conflict may produce mental illness in those specially sensitive and susceptible.

Many people have a fixed idea that once a patient is certified and put into a mental hospital he will never go out again or even if he recovers sufficiently to be able to leave the hospital he will certainly never be the same again. Only those, who have had the care of mental patients during their illness and who have watched them get well and who have followed their subsequent career, can realize how complete can be the return to the normal. It can be said with confidence that acute mental disease is every bit as curable as any other acute illness if it comes under skilled care early enough.

A lot of medical as well as lay men have a firmly embedded belief that mental disorders are almost always inherited. If it is known that one member of a family, even of a previous generation, has had mental illness that family lies under a sort of ban and people shake their heads wisely over its most innocent actions. They find it difficult to believe that any member of such a family can be normal. The merely dull and ordinary members appear to them to be half witted, the energetic ones queer and the clever ones as quite mad. The family itself keeps it a close secret but suffers from apprehension which may precipitate a breakdown. Unfortunately heredity cannot be completely disregarded as a predisposing factor in mental disease. But it is equally true that it plays no part in a large proportion of cases of insanity.

The general practitioner comes in contact with mental disease in the early stages. It is for him to give correct advice to the relatives, to dispel their fears, to adopt towards mental illness the same attitude as towards physical disorders and to treat the subject openly if any progress is to be made in the treatment of this group of diseases. When there is no longer any fear shame or scorn connected with it, when the relatives cease to apprehend a stigma, passing to them through being connected with the patient, then we shall indeed begin to tackle the question and to make real progress. Not till then will those, who specialize in the work, be able to see the beginnings of the illness instead of only the fully developed stages of it. We shall then begin to learn in a way that we cannot do at present for the early stages are still almost exclusively seen by the family doctor who has neither the time nor the special knowledge necessary for the treatment of mental illness. In any case why should he be expected to be able to treat this malady, the most complicated of all specialities and one demanding infinite time and patience? It is just as unfair as to expect him to trephine the skull or to perform a hysterectomy.

So far I have dealt with misconceptions commonly found both among lay men and medical practitioners including, of course, Government medical officers who are made of no superior clay. Now I shall turn to the wrong notions prevalent specially in the medical fraternity. The most remarkable feature of mental disorder is generally a disturbance of the emotions. The patient laughs or cries without apparent reason. No synthetic chemist has yet produced a drug which will make an unhappy person happy or a happy unhappy. Yet many of our professional brethren seem to pin a pathetic faith to some well advertised insanity cures or strong hypnotics. They fail to understand the great harm they are doing to the patient by turning his case into a chronic one and by reducing the chances of ultimate recovery. The same

doctors would never dream of wasting a moment before calling for proper surgical aid in a case of appendicitis or intestinal obstruction. Although no body now believes in hysteria having anything to do with the womb yet valerian is still thoughtlessly prescribed owing to ignorance of the psychopathology of this disorder.

The science of psychiatry is probably the youngest speciality in the field of medicine. Its rebirth is associated with the ever memorable name of Freud about 30 years ago. Happily Freud is still alive and commands universal respect among psychologists throughout the world in spite of differences of opinion that were bound to arise. We owe the concept of the unconscious to his great genius and through this thesis he has thrown a flood light into the darkest recesses of the human mind. It has revolutionized our ideas about mental disease and placed psychopathology on a firm foundation. Those medical men who qualified 20 or more years ago will remember their visits to the mental hospital as a necessary evil. One felt so depressed to see fellow beings lodged behind bars like animals in a zoo. They were mostly naked with straw for bedding. Those, who could be made to work, had to work like prisoners in a jail. Their clothes were of the prison pattern. They ground atta, pressed oil and pulled water just like convicts sentenced to hard labour. Physical chastisement was not unknown and the death rate was high. On the other hand now-a-days every effort is made to get away from the jail idea to emphasize the hospital aspect of these institutions. Instead of high walls low railings are provided with shrubbery to conceal them. Restraint is reduced to the barest minimum. With sufficient staff there need be no restraint at all. Hard labour of the jail type has been abolished. Beds are provided and the patients are properly clothed. Light, open air occupation is arranged for suitable patients as a remedial agent. No set task is exacted. Much attention is paid to recreation in the shape of games and music. Every effort is made to restore the patient's self-respect and balance of mind by humane methods of treatment. An atmosphere of kindness and hopefulness surrounds the patient. In this peaceful environment he soon settles down in the absence of the emotional conflicts and tension of the previous environment. It is strange but true that newly admitted patients usually show a marked change for the better within a few days of admission into the mental hospital.

A patient can be admitted into a mental hospital as a rule only on the authority of an order issued by a competent magistrate or judge and based on medical certificates, which are in the nature of affidavits by the certifying doctors. This is often misunderstood to resemble the procedure of sending a criminal to jail on a magistrate's warrant. In fact there is no comparison or relationship between the two cases. A mental patient usually has not the insight to seek treatment for himself and owing to this loss of insight into his condition he cannot form a sound judgment as to how long he should remain in the hospital. Usually his mental state is that of a child and he has to be kept in the mental hospital even against his wishes. In the eye of law this is illegal restraint and the procedure of medical certification and reception through a magistrate has been prescribed to remove the legal objection.

The method of getting a patient discharged from a mental hospital is even simpler. A voluntary patient can be admitted and discharged on his own written request. One admitted on petition can be sent out on a request from the petitioner. Each mental hospital has several visitors both official and non-official including doctors, who visit the institution at least once a month and can order the discharge of any body, who is fit to go out. In many places patients are also sent home on parole for short periods before they are finally discharged. Lastly almost any body can be got out of a mental hospital by some one filling a bond of responsibility for the patient's good behaviour at home.

I have made a hasty survey of a few misconceptions that need removal from the minds of the profession and the laity. I hope I have said enough to stimulate interest in this sadly neglected field of medicine and trust some of my readers will assist in the good work by spreading the truth and dispelling untruth.

AIR EMBOLISM IN ARTIFICIAL PNEUMOTHORAX

WITH SPECIAL REFERENCE TO AN ACCIDENT OF RECENT OCCURRENCE

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While engaged in my own work on 22-11-35, I was suddenly called to attended to a serious accident that, I was told, had occurred to the patient T. P. male, 43 years, who was receiving the 21st refill. I rushed to the A. P. room and found that the patient—a case of left-sided pneumothorax—had spat blood and was lying unconscious on the table with eyes turned up and rattling noise in the throat and chest. I immediately gave the patient a subcutaneous injection of 1 c.c. of camphor in ether followed by an injection of 1c.c. of pituitrin. As the rattling noise in the chest was thought to be due to the sucking in of the blood in the bronchial tubes, I got the patient propped up slightly on the table. The pulse was found quite satisfactory but the conjunctival reflex was very sluggish and the right pupil reacted very slightly to light. After a few minutes, the patient coughed out some bright-red blood and also vomited some dark-coloured blood which he had swallowed into his stomach. The rattling noise in the chest disappeared after this and the patient showed some twitching on one side of his face.

Although the patient looked more comfortable yet he remained unconscious for several hours and was crying at intervals. Later, it was found that he had developed paralysis of the right upper and lower extremities with loss of sensations. The speech was incoherent for some time. There was no involuntary micturition and the pulse remained good throughout. The temperature which ranged between 97·6 and 98·6 F before, ranged between 100·0 and 102·4 F after the accident and took nearly two weeks to settle down. The pulse was 110—115 after the accident but came down with the temperature to between 76—100.

The lower extremity and the arm and forearm began to function a few days after the accident but the paralysis of the hand still persists at the time of writing this report (19-12-35) and there is still some loss of sensation.

The patient complained of severe and persistent headache and loss of sleep for several days and at one time meningitis was suspected but the complaints disappeared completely by the administration of Veramon tablets.

Physical examination of the chest on 27-11-35 showed signs of broncho-pneumonia in the lungs but the application of antiphlogistin improved the chest condition. The blood sedimentation rate taken on 13-12-35 was 5 m.m. (Westergren method), the same as it was before the accident.

Difficulty of Differential Diagnosis between Air Embolism and Pleural Shock

The diagnosis of air embolism was made in the case on clinical grounds. The symptoms of air embolism and pleural shock are so similar and indistinguishable in many respects from each other that it is very often a matter of dispute as to which of the two conditions exists in a particular case. Some authors even go to the length of denying the existence of pleural shock and hold that air embolism is always responsible for the symptoms. It is surprising however, that Wingfield does not believe in the reported cases of embolism and holds that they are due to pleural shock. The fact that the alarming symptoms occur repeatedly in the same patient is however, sufficient evidence to exclude embolism in a certain number of cases and to admit the existence of such a condition as pleural shock. Further, the symptoms of collapse which occur sometimes during tapping or therapeutic irrigation of the pleural cavity in cases of effusion can hardly be said to be due to air embolism.

There are two points that are supposed to distinguish one condition from the other:—(1) The

repetition of symptoms at more than one refill as mentioned above is strongly presumptive of pleural shock and (2) the presence of gas bubbles in the retinal vessels is proof of gas embolism. These diagnostic criteria are however, not always available for the purpose of diagnosis. The onset of symptoms in embolism is also believed to be less abrupt thus giving time to the patient for complaining.

Mechanism of Air Embolism

Those of us who are working in the field of pulmonary tuberculosis and have some experience of pneumothorax treatment know the importance of lesser or pulmonary circulation in the causation of air embolism. While the fate of the patient into whose systemic circulation air has escaped, depends on the amount of air reaching the lungs and thence to the left heart and brain, the matter is very different when the air enters the pulmonary vein directly. Even a small quantity may cause serious embolism of the brain, the fate of the patient being determined by the site of the embolus in the brain rather than the quantity of air introduced into the circulation.

The entry of air into the punctured vessel depends on the negative pressure that exists in the intra-thoracic veins and this is more likely to occur when the vein is prevented from collapsing by the disease of the surrounding tissue. The negative pressure in the veins increases still more by pathological conditions like fibrosis, adherent pleura and bronchial obstruction.

Source of Air in Embolism

Given a punctured blood vessel in the lung, there are two sources from which air can enter the vessel:—(1) Air in the alveoli and (2) Air in the needle and tubing connected with the manometer of the A. P. apparatus. The venous pressure being negative, it is possible for the alveolar air which is at a slightly positive pressure, to be sucked into the vein especially during inspiration. The patient should therefore, never be asked to take deep breaths or cough during the early stages of pneumothorax treatment. Gas from the manometer tubing is also a possible source of embolism, particularly when the tubing is very long and of wide bore. To avoid this source of danger, the use of manometer close to the needle and narrow-bore tubing has been advocated, particularly for the initial operation. The third possible source of embolism—a source which, in my opinion, is unpardonable—is to disregard the manometric indications and force air into the chest by applying high pressure in the A. P. apparatus.

Gas embolism is therefore, possible under the following conditions:—

(1) The lung is ruptured and the pulmonary vessels are torn.

(2) The alveolar air is sucked into the veins.

(3) Gas from the manometric tubing is sucked into the veins.

(4) Gas is forced into the vein under positive pressure.

Cause of Embolism in the Present Case

What was the cause of embolism in the above case? It was argued that the patient coughed when the refill was being given and tore some vessel in the lung and the alveolar air was sucked in the bleeding vessel. The haemoptysis and embolism were accounted for by the fit of cough. This does not however, seem to be a correct explanation as the following points will show:—

(1) A Chandler needle which consists of a solid lance-shaped point and a side-opening was used for the refill and the initial pressures recorded were −3, −1 c.m. of water. (2) The level of water in the "pressure" bottle was sufficiently higher than the level in the "gas" bottle which means the apparatus was so arranged as to force air into the chest under positive pressure. (3) The collapse of the lung was very poor, there being very narrow air space as seen in the skiagram of 29-8-35. The skiagram taken on 10-12-35 showed that the lung had completely reexpanded, no air space being visible in it. This means, there must have been very little air space on 22-11-35 when the refill was given. (4) The length of the needle used was 4·75 c.m. and the whole length of the needle was pushed in the chest in the 6th interspace in the mid-axillary line and the air space being very narrow, the needle penetrated the partially collapsed lung. (5) That a pulmonary vessel was punctured is evident from the fact that the patient coughed and spat blood after

the needle was in the chest and also from the fact that blood was found present in the needle as well as in the manometer tubing. (6) That the vessel punctured was a pulmonary vein is clear from the fact that the patient spat bright-red blood (arterial blood) and the needle and tubing also contained bright-red blood. (7) It was believed that the needle was in the pleural cavity and did not penetrate the lung because the initial pressures recorded were −3, −1. This does not seem correct because the pressure −3, −1 might also be due to the needle being in a pulmonary vein. This is supported by the fact that the initial pressures at the preceding three refills were (1) −12, −6, (2) −14, −4 and (3) −7, −4 which means the average mean initial pressure for the preceding three refills was −8 while on the occasion of the accident it was only −2. In this connection I can do no better than quote Clive Riviere who says, "The most disturbing condition is one with small fluctuations about the atmospheric—a manometric reading very similar to that which would be obtained with the needle thrust into the bronchus or the lung parenchyma. These cases are disturbing because the possibility of the needle passing into or through the adhesions has always to be kept in mind..... Scrupulous care must therefore, be exercised at refills no less than at the first operation to make certain that the needle is in the pleural space before gas is entered". (8) While it was possible for the alveolar air or the air in the manometer tubing to be sucked into the punctured vein, it appears more likely that the cause of embolism was the forcing of air (as recorded) from the apparatus under positive pressure.

Taking all the above facts into consideration it appears very probable—almost certain—that the cause of embolism in the case was the puncture of a pulmonary vein and the forcing in of air under positive pressure.

Prevention of Embolism

"Prevention is better than cure" is perhaps no where so true as in gas embolism and as Lillingston has remarked. "Once gas embolism has occurred the patient's fate is little influenced by human fussing but is in the lap of the gods". With the introduction of manometer to the A. P. apparatus by Saugman gas embolism has become very rare and is said to have been relegated to the "historical period" of pneumothorax therapy but the accident does sometimes occur as in the above case and in order to minimise the chances the following "DON'TS" must be observed:—

(1) Don't puncture or tear the lung. Use a blunt needle or cannula.

(2) Don't allow air to enter the chest unless and until satisfactory manometric response is obtained. It is safer to observe this precaution not only at the initial operation but also at all subsequent refills. Most of the recorded cases of embolism have occurred during the refills and not at the initial operation.

(3) Don't force in air at a positive pressure, particularly at the first operation. Let it be sucked into the pleural cavity by negative pressure. This can be done by keeping the level of water in the "pressure" bottle lower than the level of water in the "gas" bottle.

(4) Don't ask the patient to cough or take deep breaths in order to obtain manometric response.

(5) Don't pass stilette in the needle for cleaning without using a stuffing box (obturator).

(6) Don't use manometer tubing of wide bore or needless length.

(7) Don't attempt, as far as possible, to induce pneumothorax at a point where the lung is diseased and therefore, liable to aspiration of air into a rigid blood vessel.

(8) Don't use unnecessarily high finishing pressures to establish a pneumothorax. The modern tendency is not to use high pressures.

Treatment

Treatment consists, as will be seen from the above case, in administering stimulants. The head is kept low and rhythmic traction of the tongue is tried. Artificial respiration must be strictly avoided as it may force more air into the circulation. No artificial respiration was done in the above case for the same reason. The success or failure of treatment however, depends not so much upon the efforts of the doctor as on the "luck" of the patient.

A STUDY OF MATERNAL MORTALITY AND MORBIDITY IN BENGAL

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The recent Medical Research Workers' Conference at Calcutta has opened the eyes of the Indian Research Fund Association to the problem of maternal mortality and morbidity in India. We do not like to discuss the achievement of the Indian Research Fund Association or how it will work out the present problem, but we are sure that the workers will not find a solution to any question in connexion with that problem in Bengal—if Calcutta or the Tropical School of Medicine or the All-India Institute of Hygiene be their venue of work. It will not be out of place here to mention how the Public Health Department is directing their efforts in this matter. Its attempts are undoubtedly honest, but totally misplaced because:—

Firstly: When one looks at the chart of vital statistics of Bengal, one cannot but wonder why there is only one special item for women *viz.*, death from childbirth, death during labour or within fourteen days after labour. As, Dr. G. L. Batra, Assistant-Director of Public Health, Bengal says, "I would suggest the adoption of a short list (under 40 heads) of causes of death as given by International Conference of 1929 in Paris. In larger Municipalities this is the minimum required in other parts of the world—while in India causes of deaths are recorded under 23 heads only and that even incorrectly. Vital statistics registers for rural areas printed by the Bengal Public Health Department contain the details of three lists suggested by the Paris Conference and these are printed inside the cover of the above-named register. The intermediate list showing the causes of deaths under 80 heads is adopted by the Calcutta Corporation since 1935".

As for myself, I would suggest, at least for a few years to come, separate vital statistics for men and women. There should be special heads in the women's chart as (1) single or married, (2) pregnant or non-pregnant. According to the statistics of the Health Department, the principal causes of maternal mortality is puerperal sepsis or septic fever. For under head "death from childbirth—death during labour or within 14 days after labour"—rural areas cannot supply any other cause but septic fever after labour. The Public Health Department have lost sight of a world of causes an expectant mother or mother in labour or a mother in lying-in room is heir to. Of course there are certain causes common to all the provinces of India nay of the world—but each province has its own peculiar feature. Separate sheet of vital statistics will give us a clue to causes of maternal mortality and morbidity in different provinces.

Secondly: The recording of vital statistics is done in a slipshod manner. The task is left entirely to the sanitary inspectors, who have to believe the village chowkidars for causes of death and who in addition have to depend on reports of presidents or secretaries of union boards. It is of course a herculean task for a single sanitary inspector of a *thana* to verify into causes of deaths in hundreds of villages under him. Nor is a sanitary inspector properly qualified for the purpose. Qualified medical practitioners of the locality should compete in the matter and we invite the attention of the Indian Medical Association to this direction.

Thirdly: The Health Department of Bengal is spending a huge sum every year for training indigenous dais. So far as my experience as a private practitioner in rural Bengal goes, the money is uselessly spent. It is a charity for name without any heart. During my 9 years' experience I did not meet with a single dai in any rural area who knows the A.B.C. of asepsis—far from knowing the practical methods of conducting labour. I am giving a concrete example from a small district of Bengal, Birbhum. For the last 6 years, the Health Depart-

ment is giving an annual grant of Rs. 90/- or so for the training of ten indigenous dais in the Suri Municipality. There should have been at least forty dais trained properly and more so because they are attached to the Zenana Hospital for years. A course of twelve theoretical lectures under a medical officer to illiterate women cannot make them fit enough for heavy responsibility. Then comes the rural area of Birbhum. The Health Department spent about Rs. 4,400 during the last ten years for dai training. Besides, they have to distribute at least five hundred maternity outfits costing at least Rs. 3,000. In other words, the Public Health Department has spent about Rs. 8,000/- in odd figures, for the whole district. I am sure I have not come across a single trained dai in rural Birbhum.

Have they ever enquired what do these dais learn or what do they do after finishing their course? Have they ever thought what these illiterate dais learn? These dais forget within a few days their lectures, and fall back on their old ways. It is sure that 8 out of these 10 never take up maternity work in life. They gain rupees three as cost of tiffin for attending classes over and above the maternity out fit boxes which are invariably sold off. Times without number the Health Department has been advised to spend money for dai training in a rational way. We offered a suggestion last year though in vain that two dais or at least one should be trained at least for 12 months in the local Zenana Hospital and each should conduct five normal labour cases under the direction of the Medical Officer. And this should be the mode of training in each district of Bengal. We shall have for them more efficiency at a lesser cost. We do not know when better sense will prevail and there will be no more wasting of the poor ratepayers' money.

A word about the area of proposed enquiry in Bengal. Calcutta has been suggested as the area of proposed enquiry in the Conference of Research Workers as it is taken to be representative of north-eastern India. We beg to bring to the notice of Medical Research Workers that they will err greatly if they select Calcutta as representative of Bengal. Calcutta with its numerous hospitals and free maternity homes of the Calcutta Corporation has a much better outlook than poor villages of Bengal where most of our expectant mothers underfed, underclothed, overworked and overworried have to go in labour in wretched hells and are left in the hands of dirty indigenous dais.

From the press communique we quote below the comparative statement of maternal mortality per 1,000 births in India and some other countries of the world.

Holland	... 2·4	England and Wales	... 4
France	... 2·5	Switzerland	... 4·4
Sweden	... 2·6	New Zealand	... 4·8
Denmark	... 2·6	Irish Free State	... 4·8
Norway	... —	Australia	... 5·5
Italy	... 2·8	Scotland	... 6·6
Japan	... —	U. S. A.	... 8·3
Finland	... 3·1		

Madras Presidency (special investigation in 16 Municipalities)	15·4
Madras city (Mudaliar's report) ...	16·6
Sir John Megaw (an enquiry into certain public health aspects of village life in India) ...	24·5
Tea gardens in Assam (Dr. Margaret Balfour's report) ...	42

All these four estimates leave no room for doubt that maternal mortality is abnormally high in the country. Sir John Megaw's estimate is that about 200,000 women die every year from maternal causes. This figure is equal to the combined annual mortality from small pox and plague in India during the period of ten years 1923-32. It is almost equal to annual deaths from cholera during the same period. Sir Megaw's opinion, in my opinion, is about two thirds of the true estimate.

Coming to discuss about causes of maternal mortality and morbidity in Bengal, we have to take into consideration three things.

(1) Mortality during pregnancy.

(2) Mortality during labour.

(3) Mortality after labour.

under (1) head—questions of abortion and miscarriage before full term come in. Death due to abortion and miscarriage is mainly caused by hemorrhage and septic fever. Both are due to want of proper care or neglect of attendants. Next come the series of diseases that carry off our expectant mothers—before they come to labour *viz.*, anemia,

eclampsia, malaria and nephritis, diseases such as cholera, bacillary dysentery, beriberi, pneumonia and heart disease.

The Health Department has no record of these poor dumb mothers. Their cry has filled the sky, their apparitions haunt us everywhere and make us hang our heads in shame.

Death during labour is caused by difficult labour or dystocia where there is disproportion between the child's head and the mother's uterus, where the mother has a contracted or small round pelvis, where the mother is too weak and there is a low tone of the uterus. Heart failure, haemorrhage and retention of placenta are common causes of death of our mothers. Our poor mothers and sisters do not get any aid for expulsion of their babies. And if they get any aid, it is a sort of hindrance. We have seen country dais interfering with the normal course of labour, to hurry over nature's process in showing overzealousness where there was no need of interference and thus jeopardise the lives of many. Where lives are saved, a good many have got physical disabilities. It can be dogmatically said that the lives of many of our mothers would have been saved, if there would have been no interference.

Mortality after labour is mainly due to puerperal sepsis, low vitality and anaemia. Main causes of the septic fever, it is needless to report, are interference by unskilled hands and low vitality during pregnancy.

It is very difficult to draw out a practical scheme of maternal mortality in Bengal. Our rural areas cannot boast of good qualified medical practitioners; nor can our sisters and mothers be induced to be treated by male doctors when they are in difficult labour. Of course, ignorance of mothers, ignorance of ourselves about ordinary hygiene and poverty are root causes of our trouble. Still we should try to mitigate the suffering of our crying mothers as far as practicable. Our mothers do not know what to eat during pregnancy and after its termination, our mothers do not know how to live during pregnancy and how to live in lying-in rooms. We look upon our mothers in lying-in rooms as unholy and untouchable and we are best content with leaving the difficult part of obstetrics to ignorant dais of old.

The summation of prevention of maternal mortality and morbidity lies in antenatal care and provision of a good midwife. There should be one antenatal clinic in each *thana* under a doctor assisted by two good midwives. The clinic shall have a record of all expectant mothers of the unit. The doctor should pay them a visit at least once during every three months, give special attention to those who are diseased. They should take special care of those who have anemia, albumen in the urine or troubles during past pregnancies. The District Board should make it incumbent upon every Union Board to provide for a good midwife. The Union Board has to pay less if it follows co-operative method of payment as in Surul Rural Reconstruction Scheme. These midwives are to keep a record of every pregnant woman in their area and are to attend every labour case. Of course, if two cases occur simultaneously, she has to attend the more difficult one. They will advise every expectant mother about the food, mode of life and report to the *thana* maternity medical officer if any abnormality occurs. There should be at least one maternity indoor bed under the *thana* maternity officer for difficult emergent cases and he may refer more difficult cases requiring good surgery to a well-equipped hospital.

The Public Health Department or the District Boards may reject the scheme on grounds of paucity of funds. But I can well assure that funds are not so much needed as a well planned organisation and a good co-operation scheme.

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EDITORIAL

MEDICAL CURRICULUM

Members of the profession must have noticed that during the last few years an organised effort is being made in England, America, Australia and several countries on the continent in the direction of reforming the medical curriculum. Various opinions have been expressed by persons competent to speak on the subject in the form of articles contributed to the pages of leading medical journals of these countries; and the correspondence columns of medical magazines have been fully utilised in establishing the truth of "medical student in chains". An impartial survey of the views expressed in these articles and letters convinces one of the fact that there is a widespread belief amongst the thinking section of the profession that all is not well with the methods followed in imparting medical education in the teaching centres and that there is room for introducing changes in many quarters. The primary object of the medical curriculum being "to produce on its completion a practitioner who has acquired a right attitude towards professional duties and responsibilities, an ability to deal reasonably in the early days of practice with such patients and conditions as may confront him, and such basic knowledge and mental training as will enable him to profit continuously by daily experience"—the critics of the present system of medical education as adopted by the Universities and Colleges, have questioned whether the curriculum being followed now is capable of achieving that fundamental object. Strong views have been expressed on such diverse subjects as length of time occupied by the curriculum; overloading of the curriculum; the absence of co-ordination between the subjects of study in the pre-clinical and clinical courses; the want of emphasis on the preventive aspect of medical education; the absence of "a period of time in the curriculum when the student, before he passes out as a registered medical practitioner, should be given as great a degree of individual responsibility for patients, under supervision, as could reasonably be given in the circumstances"; and many other aspects of the curriculum have come in for detailed criticism from time to time in these writings and publications which have pleaded for a recast of the curriculum to satisfy present day needs of the profession.

The Senate of the London University took the first initiative in the matter. During the session 1931—32 the Board of the Faculty of Medicine of the University was asked by the Dean of the Faculty to consider whether in view of the dissatisfaction that was felt in various quarters with regard to the medical curriculum and of numerous requests from different sources for its modification, the time had come for a review of the whole curriculum. The Board, after going into the matter in detail, set up at their meeting held on 22-7-1932 a conference composed of teachers representing the Universities of London, Oxford and Cambridge, the two English Royal Colleges and the Society of Apothecaries, "to consider the defect of the medical curriculum and

to make suggestions for reform". This Conference, with Lord Dawson as its Chairman and Sir Farquhar Buzzard as Chairman of the Executive Committee, held as many as twenty eight meetings of its Executive Committee at which it conferred with various medical teachers and representative schoolmasters and received memoranda, letters and reports from a large number of bodies and persons interested in various aspects of medical education. The Report of the Conference was issued on 30th April, 1935, signed by all the eighteen members representing the different Universities and Royal Colleges mentioned above.

At about the same time that this conference was set up the Council of the British Medical Association appointed a special Committee to consider the subject of Medical Education, which was composed of representatives not only of University teachers but of general practitioners and those engaged in the practice of special branches of medicine. The Report of this Committee which included representatives both of the teachers and the taught, was published in April, 1934, and was submitted as a memorandum to the Curriculum Conference organised by the London University.

We publish elsewhere abridged versions of these two reports in the hope that every one who takes an interest in the training of the practitioners of to-morrow will find in them more than enough material for serious thought on the important problem of undergraduate medical education. Two other reports bearing on the subject, *viz.*, Dr. Etienne Burnet's report on "Medical Education and reform of Medical Studies" to the Health Organisation of the League of Nations (October, 1933) and the final report of the American Commission on Medical Education (1932)—can be cited as valuable contributions in the same direction; and together with the reports of the Universities Curriculum Conference and the B. M. A. Education Committee they constitute the most authoritative survey of the whole field of medical education that has been undertaken in recent years.

It will be seen from a careful study of the extracts of the two reports published in this issue that they cover a wide ground and offer definite suggestions for improvement with regard to the different aspects of pre-medical, pre-clinical and clinical courses of the Medical Curriculum. The General Medical Council of the United Kingdom which is entrusted by law to exercise a regulative function over the maintenance of a minimum standard of medical qualification and which, in the performance of this duty, specifies from time to time the minimum requirements of study which it considers necessary for that purpose—has also been engaged in a serious consideration of this problem of reform of the Medical Curriculum. It appointed a special Committee, called the Curriculum Committee, on 2nd June, 1934, for the purpose of reporting what changes, if any, were necessary in the Medical Curriculum in order to remove the defects about which dissatisfaction was expressed in different quarters. This Committee submitted its report to the Council on 29th November, 1935, incorporating its suggestions in the form of revised resolutions which, it is hoped, has been considered by the Council at its session in May, 1936.

Since the system of medical training in vogue in the Indian Universities is based upon the British model and the Curriculum followed in the different Medical Colleges in this country runs more or less on the same lines as those adopted by British Universities and Colleges—the movement which has been set on foot for reforming the medical curriculum in countries outside India, will find its repercussions in our country; and it is high time that the profession in India should become alive to its responsibilities in the matter and offer constructive suggestions for reforming the curriculum in a way best suited to the peculiar needs of this country. It goes without saying that the medical needs of a tropical country cannot in general be the same as those of a temperate zone; and, therefore, the methods of education to be followed in manufacturing persons skilled in the art of healing and most of whom would be engaged in the practice of their art in tropical India, must necessarily differ in some respects at least from those followed by teachers abroad. We are authoritatively informed that the Medical Council of India which has been statutorily entrusted with the work of maintenance of a minimum standard of higher medical education in the Universities in India, has also taken up this question of reform of the Medical Curriculum. It is, therefore, incumbent on all practitioners in India, particularly the teachers of the Medical Schools and Colleges and those practising the different

special subjects of medicine, to express their views on this most important subject and submit them either as memoranda to the Medical Council of India or as contributions to the correspondence columns of this Journal.

We have deliberately refrained from expressing any opinion on the various suggestions put forward in the two reports we publish elsewhere; we hope to do this in a future issue. The chief reason for our referring to this subject in a little detail in the present issue is (a) to acquaint the profession in India with what is being done in this direction in other countries, (b) to focus their attention on the views expressed by eminent authorities abroad on the various aspects of the questions, (c) to give them a foretaste of the impending changes in the Medical Curriculum which are going to take place in countries which have for long years supplied the model on which the curriculum of our country has been cast and (d) to invite them to express their opinion on the same subject keeping in view the special medical needs of this country.

MALARIA CONTROL IN CALCUTTA

We congratulate the Calcutta Corporation on the results achieved in the direction of malaria control which forms the subject matter of an article contributed to the current issue. In the short course of three years the spleen index has been reduced by 51·45 p.c. while the parasite index has similarly been reduced by 75·39 p.c. Bombay was the first town in India to deal systematically with the malaria problem and according to Col. J. A. Sinton, I.M.S., Director, Malaria Survey of India, "this has resulted in a great improvement in the malaria condition of the city" (Sinton 1936). Many other cities like Delhi, Saharanpore, Bangalore, Ennur etc., have reaped the benefits of active anti-malaria operations. Space does not permit to describe in detail the improvements conferred on these cities but the example of Saharanpur is striking, where the spleen rate fell down from 70% in 1909 to 3% in 1929 while in a neighbouring village it was still 82% (Malaria Commission, League of Nations, 1930). The example of Bangalore is very encouraging for the smaller municipalities with limited resources for the work cost just under 6 pies per head and well under 1% of the normal receipts of the municipality, while the malaria rate and the malaria death-rate per thousand were halved from 1929 to 1932 (Sweet and Rao 1934). Apart from the benefits conferred on the citizens, the success of the anti-malaria operation of the Calcutta Corporation will be a source of inspiration to other municipalities and district boards of Bengal in combating with this dreadful scourge which, according to the Royal Commission on Agriculture in India, "is most disastrous to the wellbeing and the efficiency of the population".

MODERN THERAPY IN GENERAL PRACTICE

SOME ACUTE NASAL CONDITIONS SEEN IN GENERAL PRACTICE

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To-night's discussion will be on some acute nasal conditions seen in general practice and I will deal briefly with acute inflammation of the nasal accessory sinuses.

Now, it is becoming increasingly recognised by the profession that acute infection of the accessory sinuses of the nose is much more common than many of us have imagined. Cases of influenza that have failed to be cured by ordinary treatment as quickly as they should, and in which the headache and rise of temperature have continued in a most unaccountable manner, must be familiar to us all. There is no doubt that in many of these cases the persistence of the symptoms is due to infection in one or more of the nasal sinuses. I shall here cite a case to illustrate this.

A lady, wife of a friend of mine, was suffering from a typical attack of influenza: headache, backache, a temperature of 103°F, general malaise, nasal catarrh and sneezing, sore throat and cough. In spite of skilled treatment by the attending physician, the temperature kept at a high level and the headache remained a marked feature. This (headache) was splitting in character and was so much distressing that the doctor had to send for me at last—about a week after the onset of her illness. The headache was described as being all over the head but on asking her in different ways I brought out the fact that it was most excruciating over the left half of the forehead. On examination the left middle turbinal bone was congested and there was found puslike discharge under it and on the medial surface of the left inferior turbinal and there was tenderness over the left canine fossa. On trans-illumination the left maxillary antrum was dark whereas the right antrum lighted well. A diagnosis of suppuration of the left maxillary antrum was made. The ritual nasal spray was prescribed and the left maxillary antrum was punctured the next day. Pus came out and the cavity was washed with warm boric lotion, bringing out offensive smelling turbid fluid. Patient felt much relief, headache disappeared, and she could sleep well that night which she could not for the last few nights. The cavity was irrigated twice more after that. The lady has had no more headache or any other trouble referable to the antrum since the attack which she had a year and a half ago.

It may be recalled here, to refresh our memory, that the accessory sinuses of the noses are pneumatised areas situated near to each other in the bones adjacent to the nasal cavities. These are divided into an anterior and a posterior group. The anterior group is composed of the maxillary antrum, frontal sinus and the anterior ethmoidal cells. The posterior group is composed of the posterior ethmoidal cells and the sphenoidal sinus. They communicate with the nasal cavities through openings or ostia which are distributed about the middle turbinal bone. The ostia of the cells of the anterior group open into the middle meatus beneath the middle turbinal whereas the superior meatus (above the middle turbinal) receives drainage from the posterior group of sinuses. The ostia of the maxillary antrum and the sphenoid are situated above the level of the floor of their sinuses and make drainage in the ordinary position of the head difficult. Those of the frontal and ethmoidal sinuses are at their lowermost levels and hence allow for a better natural drainage. But it must be remembered that these ostia are extremely minute, and hence any infection of the nasal mucous membrane which causes engorgement and swelling of the middle turbinal bone and of the lips of the ostia may lead to occlusion of these openings and consequent retention of inflammatory products within the sinuses. Should infection have reached the interior—and there is no doubt that even in the common colds it usually does—the result will be an

illdefined headache with more or less elevation of temperature, depending on the virulence of the causative organism and the sinus involved.

Usually the sinuses infected are those of the anterior group, and most commonly the maxillary antra and the frontal sinuses. And our attention is directed to the sinuses by the following complaints of the patient:—

Nasal discharge, more profuse than in the ordinary cold, at first bilateral, later usually becomming unilateral.

Nasal obstruction, which varies with the amount of discharge that collects in the nose and engorgement and swelling of the mucous membrane.

Headache which is usually at first frontal in type, irrespective of which sinus or sinuses are involved but later it tends to be referred to particular regions of the head corresponding to the sinus affected.

Frontal headache most often indicates disease of the anterior group of cells while occipital headache does that of the posterior group. The patient may have noticed increased severity of the headache during certain parts of the day—this intermittence is typical and depends on drainage.

Acute Antral Suppuration

The ostium being situated some distance above the level of the floor of the sinus, the drainage of the antrum is very insufficient and stagnation of the infected secretion is more likely to occur than in any other nasal sinus. We should therefore expect suppuration of the antrum to be comparatively common, as indeed it is.

While speaking on this subject, it reminds me of my days as House Surgeon to the Ear, Nose and Throat Department of the King Edward VII Hospital (the present Royal Infirmary) at Cardiff in 1918. In those days most of the acute antral cases were referred to our throat clinics by the dental surgeons. Here also on referring to my case notes during the early years of my practice I find that many cases had had a visit to a dentist. The reason is to be found in the history which commonly runs as such. The patient has had a "cold" or an attack of influenza associated with pain in the cheek, which he thinks is due to defective teeth and which the doctor has advised he should have extracted. Sometimes the dental surgeon reports that there are no teeth likely to be the cause of the pain, but more often he has taken out one or more teeth, and when relief has not been obtained has sent the patient to the rhinologist. But, happily, things have altered now-a-days and such patients are referred by their doctors direct to the throat surgeon. This I attribute to the establishment of ear, nose and throat departments at the two medical colleges in Calcutta where students are taught the significance of the various manifestations of diseases affecting this region of the body. Through the doctors the general public is also educated in matters medical. Here lies the utility of having special departments in a teaching institution. I am sure if we keep the possibility of antral suppuration in our minds, we shall less frequently make mistakes. As in the case of many other diseases, we have only to realise its relative frequency to be on the look for it and diagnose it when we come across such a case.

The symptoms are generally as follows:—

The patient has a cold associated with nasal obstruction and discharge, general malaise, illdefined headache and fever of moderate degree. A feeling of distension, or pressure, in one or both maxillae is practically always present and is due at the beginning of the illness more to hyperaemia and swelling of the antral mucosa than to the internal pressure of pent-up secretion. As the disease progresses, the feeling of distension is replaced by pain which is neuralgic in character and is usually complained over the corresponding eye brow and sometimes referred to the temples. Killian thinks "the site of predilection is the supra-orbital area." My experience fully confirms this and I have always held that frontal headache is a very characterstic sign, almost pathognomonic, of antral suppuration, and this has been confirmed by my findings after puncture or at the operation table. This pain is intermittent most frequently, being increased in the afternoon when the discharge accumulates in the sinus and causes pressure against the walls. The gums or teeth of the upper jaw may be sensitive and painful.

Discharge is serous or mucoid at first, and purulent later. It is most often unilateral, but may be in both nasal cavities. It is usually profuse in amount, increases when the head is bent down-

wards and forwards, and is more abundant in the afternoon than in the morning.

If the maxillary ostium is completely occluded and the infection a virulent one, swelling of the cheek with oedema under the eyes is seen, and great tenderness over the anterior surface of the sinus is felt on pressure. In these circumstances there may not be any nasal discharge but congestion and obstruction in the corresponding nostril is always present, and the sense of smell is greatly impaired.

On examination one finds an intensely congested and swollen nasal mucosa and enlarged turbinal bones. The swelling is most marked in the middle meatus of the affected side, and the mucosa in the region may bleed when touched with a cotton-tipped probe. Muco-pus may be seen coming from below the middle turbinal bone but this may not at times be possible until the mucous membrance has been shrunken with cocaine or adrenaline. And placing the head forwards and downwards with the suspected side uppermost will help in bringing out the discharge.

Tenderness to pressure over the canine fossa is present, and it is most important to compare the two sides by pressing on them simultaneously.

Transillumination is of great value and should be done whenever antral suppuration is suspected. The normal light area immediately below the orbit —the intraorbital crescent—will be absent if the antrum is infected *i.e.*, the part will be dark.

X-ray shows an area of increased density in the diseased antrum.

Irrigation of the antrum through the naso-antral wall brings forth muco-purulent secretion.

Acute Frontal Sinusitis

The pain is frontal in type and often severe. It has a very definite periodic character which is of considerable assistance in differentiating the condition form supra-orbital neuralgia. Commencing in the early part of forenoon, say at about 10 o'clock in the morning, the pain becomes progressively worse towards mid-day or one o'clock and then subsides gradually during the afternoon, to reappear at about the same time the next morning. A pain of this type affecting the region of the frontal sinus is absolutely pathognomonic of acute inflammation within the sinus. At night the patient is free from pain and his sleep is not disturbed. If he complains that he cannot sleep for pain, it is certain that the condition has either progressed to an osteomyelitis of the frontal bone, or that it is due to some other cause not associated with the frontal sinus. Discharge increases when the head is held unright. It is more profuse in the morning than in the afternoon.

Tenderness over the frontal sinus region above and below the supra-orbital margin is fairly definite and a very useful diagnostic sign—that over the floor of the sinus, just above the inner canthus, is more reliable than over the anterior wall. If only one sinus is suspected to be diseased, it is helpful to exert the same amount of pressure with the index finger on the two sinuses simultaneously, care being taken to avoid pressing on the supra-orbital or supra-trochlear nerves. Discomfort on looking to one or the other side is common, and it is due to the fact that the pulley of the superior oblique muscle is attached to the periosteum over the floor of the sinus. Elevation of temperature is present, its range depending on the virulence of the infection. Oedema, when present, occurs over the frontal region and in the upper eyelid.

Another cause of acute frontal headache is acute maxillary antrum suppuration but in this latter disease the pain increases in the afternoon and often keeps the patient awake at night.

The intranasal signs of frontal sinus suppuration are seldom characteristic, but usually the same injection of the mucous lining is seen on the affected side, especially of the middle turbinal bone. Often the nasal septum is found deviated to the affected side, and thus hindering the drainage and ventilation of the sinus may act as a contributory factor in the causation of the disease. When pus is seen, it is either under the middle turbinal bone and farther forward than in the case of antral suppuration, or it is high up in the olfactory cleft between the septum and the middle turbinal bone.

Transillumination shows clouding of the frontal region but it is not of great value as an aid in diagnosis. X-ray discloses a definite increased opacity in the sinus involved and is of the greatest help. A radiogram should always be taken, especially if any operative interference is contemplated. This will show what manner of sinus we

are dealing with; The most useful view is the "nose-chin", that is, one taken with the patient's nose and chin resting on the plate.

As little surgical intervention as possible should be attempted in the presence of an acute infection which is usually very virulent in this disease. But this may sometimes be necessary when general medication and intranasal medicinal treatment fail. The middle turbinal bone may have to be refracted, as utmost its anterior end may be resected, if satisfactory drainage cannot be established otherwise. The frontal sinus may have to be probed. Or if the fronto-nasal duct is narrow and is the cause of the retention of secretions, it can be quite sufficiently enlarged intranasally with a rasp.

Acute Ethmoiditis

The ethmoid labyrinth is usually involved in disease of any other sinus and in practically every case of acute rhinitis and hence acute infection within the anterior ethmoidal cells is very common. Its symptomatology also is very indefinite. Headache is a constant symptom and the pain is referred to the back of the eyes and is increased by movement of the eyeball. Tenderness to pressure is definite against the eyeballs, and against the nasal and lachrymal bones, below the inner canthus (in frontal sinus suppuration the tenderness is above the canthus). X-ray shows clouding of the ethmoidal cells, but as the condition clears up usually without much delay, radiography is seldom called for.

Acute Sphenoidal Suppuration

Acute sphenoidal suppuration is a condition of considerable interest to the rhinologists. It is a very definite entity and by no means rare. Briefly, the symptoms are headache and elevation of temperature. The headache is of a particularly distressing kind and is deep-seated. It is usually referred to the occiput, but sometimes to the ears, the temporal region, or deeply behind the eyes. A physical sign that is not easily explained is proptosis of the upper eyelid on the affected side.

Treatment of Acute Sinusitis

With proper medical treatment most of these cases will subside and surgical intervention is necessary in a few of these.

Rest in bed is most important. This builds up a resistance and gives the body an opportunity to overcome the infection. A dose of calomel, or castor oil, should be given at the outset. Heat, either in the form of fomentations, or as radiant heat, is most comforting, specially in frontal sinusitis. Dover's powder (gr. x) is administered at night to give rest and induce perspiration. Salicylate of sodium in 10 gr. doses or acid acetyl salicylic—are given three times a day to control the infection. Ephedrine in liquid petrolatum one-half per cent. is beneficial whenever the sense of obstruction is very distressing—this may be sprayed with an atomiser or used as drops. Pledgets of cotton wool soaked in cocaine solution may be passed beneath the middle turbinal bone in anterior sinus infections and between this bone and the septum in posterior sinus infections twice or thrice daily. This will cause shrinkage of the mucous lining and of the lips of the ostia and thus facilitating drainage bring relief to the patient.

Steam inhalations are very soothing and may be prepared with Tinct. of Benzoin, a teaspoonful to a pint of boiling water, or Tinct. of Benzoin and four grains of menthol to a pint of boiling water.

If inspite of this treatment the symptoms persist for two or three days, it is probable that some slight surgical interference may be necessary. The failure is due to imperfect drainage and this may necessitate removal of the anterior end of an enlarged middle turbinal bone. The frontal sinus may have to be probed or the fronto-nasal duct widened with a rasp intranasally. The antrum may have to be irrigated by puncturing through the naso-antral wall or nasal antrostomy performed in rare cases.

The sphenoid may have to be punctured and irrigated. A submucous resection is sometimes necessary even in the presence of an acute infection but it is better to put it off, if possible.

Majority of the cases will undoubtedly settle down with such purely intranasal conservative measures and no external operation need be undertaken. But in some exceptional cases even such may have to be employed. Thus in frontal sinus suppuration when the infection is particularly acute and the onset of external symptoms is rapid with the formation of a swelling over the floor of the sinus just above the inner canthus, and when the toxaemia is severe, I think an external incision should be made, otherwise there is a risk of orbital

cellulitis, meningitis or other serious complication occurring. In no case, however, should an elaborate operation be attemped, and the surgeon should content himself with merely evacuating the pus, putting in a drainage tube, and leaving the wound open. But it is highly important that the fronto-nasal duct be widened intranasally at the same time so that the main drainage may take place that way. Again in antral suppuration where the ostium is occluded and the sinus is the site of a closed empyema with bulging of the naso-antral wall and swelling under the upper lip (in the gingio-labial fold)—the pus bursting through the anterior wall of the antrum in the region of the canine fossa where the bone is thinnest—the abscess should be opened through the mouth but at the same time nasal antrostomy should be done. With this the inflammation should subside rapidly. As little surgical intervention as possible should be undertaken in the presence of an acute infection for fear of opening up new areas of exposed bone and other spaces—the main idea is to limit the infection as far as possible.—(*Read at a clinical meeting held under the auspices of the Calcutta Branch, I. M. A. on 28th May, 1936.*)

CURRENT MEDICAL LITERATURE

MEDICINE

Lymphgranulomatosis (Hodgkin's Disease)

KRUEGER AND MEYER (*Journ. of Lab. and Clin. Med.*, April, 1936, page 682) give a review of 66 cases of Hodgkin's disease of which 16 were autopsied. The author describes the subjective and objective findings present in them and also the postmortem lesions. Affection of the respiratory system and involvement of the mediastinal glands were particularly common. They also observed hypotension, fever at certain periods of the disease, tachycardia, and an increased basal metabolic rate in many cases. Blood picture was similar to that described by Bunting and with the progress of the disease there was marked lymphopenia both absolute and relative. Though high voltage roentgen therapy relieved the symptoms in most of the cases so treated the authors are unable at the present moment to say that by irradiation therapy the lives of the patients can be prolonged.

Diagnosis of Obscure Long Continued Fever

HAMMAN AND WAINWRIGHT (*Bull. Johns Hopkins Hospitals* February, 1936, page 109) report 90 cases from hospital and private practice and deal them under two headings (1) cases with fever not higher than 101°F., lasting for a prolonged period and having symptoms so mild as to be up and about and (2) cases with a higher temperature and symptoms usually confining the patients to bed. The authors deal with the first group of cases in this paper and divides them into 3 sub-groups: (a) In about 40% of the cases an accurate diagnosis is made and the cases consist mostly of tuberculosis, undulent fever, hypernephroma and Hodgkin's disease (b) in 50% of the cases the symptoms subsided slowly and the patients recovered without a well-supported diagnosis being ever made; (c) in 10% the symptoms persist for a prolonged period of time (in one case the fever persisted for 30 years) but a diagnosis can never be made. In cases not diagnosed tuberculosis, undulent fever, rheumatism and focal infection are usually suspected. The authors observe that they could not find out any definite relation between obscure long-continued low grade fever and focal infection. They draw attention to metabolic disorder, endocrine imbalance, psychosis, effort syndrome as possible causes of this type of fever.

The Influence of Gall-bladder and other Infections on the Incidence of Coronary Thrombosis

CAMPBELL (*B. M. J.*, April 18, 1936, page 781) reports several cases in detail which go to show that there is in many cases of coronary thrombosis a history of infection either concurrent or previous, his series consisting of cases having infection of the gall-bladder, influenza, syphilis, diabetes, phlebitis and other pyogenic infections. The author holds that though it is very difficult to prove conclusively that these infections are the determining cause of the cardiac lesion the presence of any such focal infection demands its elimination to avert a cardiac catastrophe.

The Role of Accidental Puncture of Veins in the Production of Allergic Shock

WALDBOTT AND ASCHER (*Annals of Int. Med.* March, 1936, page 1232) write that though allergic shock following injections of pollen extract and serum has often been reported the importance in this connection of accidental intravenous injections of the allergen has not been sufficiently stressed. The authors observe that a puncture of a vein may produce two clinically distinct types of reactions, depending on whether the extract is injected directly into the blood stream ("intravenous" reaction) or seeps into a small punctured venule soon after the injection ("back-seepage" reaction.) The distinctive features of intravenous reactions are:—(1) unusually severe internal manifestations coming on almost immediately—symptoms attributable to the production of oedema of the lungs and probably of the liver; (2) the total absence or presence of a very little skin manifestation and (3) the absence of allergic symptoms after the reaction is controlled. The characteristics of "back-seepage" reactions are (1) presence of blood at the site of injection or a bloody effusion under the skin soon replaced by a wheal; (2) generalized allergic symptoms occurring in 1 to 5 minutes consisting of both local cutaneous and general internal manifestations. Of 41,037 injections made the authors had 4 cases of true "intravenous" reactions and 34 cases of "back-seepage" reactions. The authors recommend the following measures to be adopted to prevent the occurrence of such accidents:—(1) the area of injection should not be highly vascular; (2) there should be repeated withdrawal of the plunger before and during injection (3) tight pressure or application of a tourniquet if there is a bleeding or subcutaneous haemorrhage at the site of injection to prevent "back-seepage" reaction, (4) the immediate injection of epinephrine. The observations were made on patients having injections of pollen extracts but the authors write that they are applicable to injections of serum or any other antigen to which unusual sensitivity exists.

Cadaver Blood for Transfusion

YUDIN AND HIS ASSOCIATES (*Journ. Amer. Med Association*, March 21, 1936, page 997) give their experience on transfusion with cadaver blood. 924 transfusions of blood from the cadaver have been given with very satisfactory results. The author's clinic also suplied 100 flasks of cadaver blood to various hospitals and clinics. The authors observe that because of "fibrinolysis" blood of individuals dying suddenly remains fluid and can be preserved for more than 3 weeks. The subsequent postmortem examination on the cadaver and the serological and bacteriological tests applied to the blood itself will determine its suitability for use and after such examination if it is found suitable it can be kept stored in the cold. The authors write that the best subject for collecting blood is one who has died from coronary disease or electrocution and other traffic accidents and the method of obtaining blood is by opening the jugular veins while the patient is placed in the Trendelenburg position. The authors further observe that the therapeutic effect of such blood does not differ in any way from that of blood from a living donor. Moreover repeated transfusions of the same blood can be given instead of using the blood of different donors.

Urobilinuria and its Importance in Malaria

SINGH (*Antiseptic*, April, 1936, page 212) reports the study on the significance of the presence of urobilin in urine of patients suffering from various diseases. He discribes in detail the methods of qualitative and quantitative estimation of urobilin. The author observes that a strongly positive urobilin test with 8,000 to 30,000 units per 100 c.c. of urine (normal being 10 to 500 units) showing red reaction to para-dimethylaminobenzoldehyde gives a very good presumptive evidence of the presence of

malaria in any acute febrile condition even in absence of the parasites in the blood. He further observes that in lobar pneumonia the urobilin test is weakly positive giving pink color to para-dimethyl aminobenzoldehyde with units of 4,000 to 8,000 per 100 c.c. and the test actually differentiates this condition from other lung conditions *e.g.*, pleurisy with or without effusion. The author has also found the test of value in differentiating cases of cerebral haemorrhage from those of embolism and thrombosis being positive only in cerebral haemorrhage and he observes that the test is also positive in chronic cholecystitis.

Cardiac Pain and Coronary Disease

BRUENN (*Amer. Heart Journ.* January 1936, page 34) review the clinical and pathological features of coronary disease associated with cardiac pain after a close study of 476 cases. In discussing the etiology of the disease the author grouped the cases under 4 headings: arteriosclerosis; syphilis; rheumatic fever; and miscellaneous (cardiac hypertrophy of unknown origin, embolism of a coronary artery, adherent pericardium, ball-thrombus in the left ventricle with cardiac aneurism, aortic aneurism compressing on the coronary artery). The author observes that irritation in the wall or spasm of the coronary artery or both are the causative factors but the presence of a thrombus or the sclerosis of the artery doubled the incidence of pain. Arteriosclerosis was found in 338 cases and was the commonest causes of pain. This condition was present in patients aged from 20 to 85, twice as often in males as in females and eleven times as many in white as in black subjects. Occupation, the presence or absence of hypertension had no influence on the incidence of pain. Pain was present in less than half of the patients with coronary thrombosis and those patients who did not complain of any symptoms before the acute attack were less likely to have pain with it.

Gold Salts in Hyperthyroidism

FUERTES (*Anales de Medicine Interna*, January, 1936, page 37) reports 13 cases of hyperthyroidism treated successfully with gold salts. Gold was used intramuscularly in small and repeated doses and the result was as follows. In 7 there was subjective and objective improvement, in 3 no improvement, in 2 the improvement was marked but only temporary and in another the treatment had to be stopped. The follow up study showed that the improvement continued to last for several weeks after the treatment had been stopped.

Pulmonary Gangrene—Sublimate Inhalation

VIEL (*Deutsche Med. Wschr.* No. 45 1935) writes that taking the suggestion from Prof. Koranyi he tried the sublimate inhalation in two cases of confirmed pulmonary gangrene and obtained truly marvellous results. The patient with his eyes well covered with protective bandage should inhale 25—30 c.c. of 1 per mille sublimate solution twice daily through a steam atomiser. The urine should be examined for albumen regularly during the course of treatment and sometimes afterwards. The author writes that in both the cases the temperature gradually came down to normal, sputum decreased from day to day and lost its offensive odour and the skiagram showed marked improvement. Both the cases were cured though one died of oesophageal carcinoma one year after and they did not show any albuminuria though they had the inhalations continuously for one month. The result noted is highly encouraging and the treatment deserves further trial.

Polycythaemia

HASSE, FRANKE, AND HERRING (*Klin. Woschr.* No. 40, 1935) report that they investigated in experimental animals the poisoning symptoms of phenylhydrazin which has been recommended by Eppingar and Kross as a very valuable remedy for polycythaemia. They injected the drug into dogs which died on an average after 20 days as a result of the injection and the cause of death was found to be depletion of glycogen from the liver and muscles especially from the cardiac muscles. They also found that if substances which form or save glycogen *e.g.*, grapesugar, dioxyacetone, small quantities of magnesium chloride etc. are given orally simultaneously with the injection of phenylhydrazin the animals do not die and remain well. The authors recommended the use of phenylhydrazin in polycythaemia until a less harmful product is found out and advise the use of the above-mentioned substances in addition, to abolish the dangers of the remedy.

Injuries from Pyramidon

DENNING (*Deutsche Med. Wschr.*, No. 34, 1935) writes that at the instigation of the German Board of Health he investigated the question of injuries due to pyramidon specially the production of agranulocytosis characterised by sevare necrotising angina, a sudden fall of leucocytes and almost complete disappearance of polymorphonuclear leucocytes. The author observes that none of the hundreds of patients in his institution who were having pyramidon for the last few years in large doses had developed agranulocytosis. He states that two women suffering from obstinate pains in joints had in course of their treatment very large amount of pyramidon (one had about 600 grms. and the other 1,500 grms.) but both showed their granulocytic count normal. The author concludes that an idiosyncrasy to pyramidon which brings on agranulocytosis is extremely rare and the observes that there is no reason to abandon completely such a valuable remedy as pyramidon in cases where it is indicated though he interdicts its use in angina as it is impossible to be sure that it is not an incipient agranulocytosis.

The Subcutaneous Injection of Alcohol for Pruritus Ani

HASKEL AND SMITH (*Journ. of Amer. Med. Association*, April 11, 1936, page 1248) report on the successful treatment by subcutaneous injection of alcohol in 22 cases of severe intractable anal pruritus which were refractory to ordinary methods of treatment and in which no causative factor could be demonstrated. One segment of the affected parianal skin is dealt with at a time and after anaesthetising the part with procaine hydrochloride 70% alcohol is injected subcutaneously (not interdermally) taking particular care of not injuring the anal sphincters and the membranous urethra in the male and avoiding the injection of too great quantity of alcohol. Of the 22 recorded cases 16 were completely cured, 4 were almost free from itching and 2 failed to respond. Six cases developed ulcers with sloughs but the results in these cases were better because of greater amount of fibrosis formed. The most striking feature observed in many cases was the quick improvement in the appearance of the skin viz., it became quite soft and smooth instead of remaining tough and badly excoriated.

Ergotamine Tartrate in Migraine

LENNOX AND STROCH (*Jour. Amer. Med. Association*, July, 1935, p. 169) report on the results of the administration of erogtamine tartrate in 120 cases of migraine. The first use of the drug resulted in prompt and complete relief from headache in 107 cases. 19 patients used the drug for more than a year and 18 obtained immediate relief on each occasion it was used. The salt is used intravenously or subcutaneously, oral administration being useless. The usual dose is 0·5 mg. Ergotamine raises the blood pressure and should be used with caution in patients with arterial disease. Intravenous injection is followed sometimes by unpleasant symptoms of nausea, vomiting or muscular pain. The authors advise its use by the intramuscular route.

SURGERY

Prevention of Cancer

HANDLEY (*Lancet* May 2, 1936, page 987) in his Mitchell Banks Memorial Lecture on prevention of cancer tells that the general conception of the origin of cancer process is chronic irritation, physical, chemical or bacterial, causing lymphangitis and subsequent lymph stasis. He observes that nearly every form of cancer affecting squamous celled, transitional or columnar celled surface is preceded by papilloma and in the case of glandular mucous membrane it is preceded by adenoma and papilloma and adenoma are manifestations of lymphatic obstruction as evidenced by histological studies. This lymphatic obstruction is thus the precursor of cancer and may be described as its cause. If the lymph stasis theory of cancer is valid the simple method for its prevention is to maintain the lymphatic circulation throughout the body in the states of high activity. Thus regular exercise and moderation of diet on the one hand and avoidance of infections and their prompt treatment on the other will go a great way in the prevention of the disease. He then lays stress on the influence of preputiectomy on the low incidence of penile cancer and cancer of the uteres and of dental hygiene on the incidence of the cancer of the alimentary tract. He then sums up his simple practical programme for the prevention of cancer.

"Preputiectomy on all male infants at birth for the abolition of penile cancer, the diminution of cancer of the cervix in women to one-sixth of its present incidence, and a probable incidental lowering of puerperal mortality; instruction to men on the importance of personal hygiene; a short prophylactic course of deep x-rays to the breast in all cases of chronic mastitis, specially if cystic, for prevention of breast cancer; dental treatment of the people on a national basis for the prevention of cancer of the mouth and alimentary canal."

Tumors of Spermatic Cord, Epididymis and Testicular Tunic

THOMPSON (*Surgery, Gynec and Obstet*, April, 1936, page 712) reviews the literature on the subject and reports 41 cases of testicular tumors seen at Mayo Clinic. Of these 41 cases 26 were tumors of the spermatic cord, 13 of the epididymis, 2 of turnica vaginalis. Of the 26 tumors of the spermatic cord 21 were lipomas, 1 fibroma, 1 haemangioma, 1 cystadenoma, 1 fibrosarcoma and 1 myosarcoma. Of the 13 tumors of epididymis 1 was dermoid cyst, 1 cystadenoma, 4 angiomas and 7 carcinomas. Of the 2 tumors of the tunica 1 was fibroma and another cystadenoma. Unlike the tumors of the testis these tumors are mostly benign and as such the prognosis is favourable.

Animal Charcoal in the Treatment of Erysipelas

GONZALEZ AND SCHTEINGART (*Pensa Medica Argentina*, February 5, 1936, page 371) write that they used intravenous injections of animal charcoal in the treatment of erysipelas and report that the result is highly encouraging with very rapid recovery; the pain and sensation of tension in the affected tissues stop, the fever comes down, the general symptoms improve and desquamation soon follows. 3 to 5 c.c. of 2% suspension of animal charcoal in a 10% hypertonic dextrose solution is used. The said solution can be sterilised in the autoclave and can be preserved for a long time.

Headache in Spinal Anaesthesia

HARRISON (*Arch. of Surg.*, January, 1936, page 99) writes that the solution used in spinal anaesthesia though rendered as non-irritating as possible still injures, the pia-arachnoid sufficiently to induce excessive absorption of cerebrospinal fluid and this causes headache. The author used 4 ounces of a 5% dextrose solution intravenously immediately after the operation and found it effective in relieving the headache. The explanation suggested by him is that dextrose solution causes hydraemia sufficient to check the excessive absorption of the cerebrospinal fluid which is the cause of headache.

The Role of Sympathectomy in the Treatment of Peripheral Vascular Disease

HARIS (*Br. Jour. of Surg.*, 1935: 23: 414) reviews the results obtained by sympathectomy in Raynaud's disease, Buerger's disease and peripheral arteriosclerosis treated in the Toronto General Hospital. Twenty four cases of Buerger's disease, 12 cases of peripheral arteriosclerosis and 4 cases of Raynaud's disease were treated. Seventy-nine per cent. of the cases of Buerger's disease were greatly benefited and the operation was lumbar sympathectomy in cases with lower extremity involvement and removal of the stellate ganglion in cases with upper extremity involvement. Of the 12 cases of peripheral arteriosclerosis 5 showed good results, 6 poor and 1 though showed very good immediate result had his extremity amputated later on. All the four cases of Raynaud's disease improved by sympathectomy. The author used the extraperitoneal approach of the lumbar sympathetic chain. The stellate ganglion was removed by the posterior approach. The author observes that the preoperative test with spinal anaesthesia showing a rise of skin temperature is a very accurate means of determining the cases which will be benefited by sympathectomy.

Osteomyelitis in Children

COHEUR (*Rev. de Chir.* December, 1935, page 768) reports 59 cases of osteomyelitis of the long bones met with in children. The author observes that boys were more affected than girls and the causative factor was infection in 21 cases and trauma in 15 cases and of the infective agents staphylococcus formed 80% and strepto. 15%. The most common site of the lesion was tibia, femur and humerus came next in order and the lesion was single in 46 cases and multiple in 13. The author then describes the three clinical types of the disease in his series with their characteristic symptoms and

signs, *viz.* (1) septic type (2) pyemic type and (3) localised type. The septic type usually gives a history of injury and is followed by pain in the limb, redness and swelling and the cases soon pass into a state of delirium and coma with death at any time. Surgical intervention has little effect and the author noted 7 cases of this type. The second or pyemic type is often grave and starts with a history of pain in the limb but this pain soon stops for 2 or 3 days and the child then suddenly becomes gravely ill and amputation of the limb may be necessary. In the benign form of this pyemic type the symptoms are less virulent and the prognosis is usually good. Puncture or incision of the abscess and curetting of the bone are all that is necessary. The third or the localised type is with or without the formation of sequestrum and is cured by incision and drainage. The result of treatment was as follows:—recovery in 39 cases, death in 10, and disability in the shape of ankylosis and amputation in 10.

OBSTETRICS AND GYNAECOLOGY

Observations on the Gall-Bladder and Bile during Pregnancy

POTTER (*Journ. Amer. Med. Assoc.* March 28, 1936, page 1070) writes that he investigated during the last five years into the cause of the frequent occurrence of abdominal distress in the upper right quadrant of the abdomen of women during antepartum and postpartum periods by the routine practice of inspecting, palpating and aspirating the gall-bladder in all his cesarian cases. He did 390 cesarian sections in normal pregnant women at term and by the above methods of examination has observed that the 70% of the normal gall-bladder during pregnancy, at term, are found distended; that it is very common to find stasis of bile in such a gall-bladder; that bacterial invasion of the bile is very rare; that there exists a hypercholesteroemia in pregnancy at term. The author further observes that during the investigation his procedure of examination did not produce any ill effect to the patients and moreover the post operative nausea and vomiting were reduced by release of the intra-gall-bladder pressure. The author writes that metabolic dysfunction associated with functional motor disturbance and stasis rather than infection or mechanical pressure would seem to be the precurser of biliary disease in women. The author recommends appropriate intake of fat during antepartum periods which will prevent gall-bladder distress provided no previous cholecystitis exists.

Significance of Menstrual Cycle for Calculation of Date of Birth

WAHL (*Munchener Medizinische Wochenscrift* February 23, 1936, page 311) writes that though the date of delivery is usually calculated by adding 280 days to the first day of the last menstruation this computed date rarely coincides with the actual date of delivery. He investigated in 5,000 obstetrics cases how often a mature child is born 280 days after the first day of the last menstruation and whether there is any relation between the computed date of birth and the menstrual cycle. He found out that in 65% of the women with a menstrual cycle of 28 days delivery takes place after 280 days and in 75% of women with a cycle longer than 28 days the delivery takes place at a later date but in women with a cycle less than 28 days the calculated date of delivery is not reached in 80%. The author concludes that in case the gestation has gone beyond the calculated date measures to induce delivery may be postponed to a later date in women with a cycle of 28 days or longer but not in cases with a shorter menstrual cycle in which cases it is advisable to take measures soon.

Maternity Statistics from Madras

NAIR (*Sankhya*, April, 1936, page 168) summarises the results of an analysis of certain maternity statistics collected from the annual reports of Egmore Maternity Hospital, Madras, covering the period 1920—1933.

(1) There was a steady growth in the annual number of confinements, which was in proportion to the growth in the annual number of births in the city of Madras.

(2) Significant variations occurred in the number of confinements in different months, with a maximum in October and a minimum in February. The seasonal index varied between 21·8 below and 20·7 above 100.

(3) The average maternal death-rate was 21·61 *per mille*, and probably remained stationary throughout the period.

(4) The average still-birth rate was 8·8 per cent. which also probably remained stationary throughout the period.

(5) The average infantile death-rate was 68·33 *per mille* of live-births, but the actual rate decreased considerably during the period.

(6) The proportion of "natural" labour cases was about 60 per cent. and fairly steady and the mean para for such cases was 3·35. There were significant variations in the mean para for other classes such as "tedious", "laborious", "preternatural", and "abortions". Percentage of still-births were also generally in excess in other classes as compared to "natural" cases.

(7) The average proportion of primipara cases was about 27 per cent. which remained sensibly constant. Compared to "natural" cases, the percentage of primipara was higher in all other classes excepting "abortions" where it was significantly lower.

(8) Both maternal and infantile death-rates were generally greater, and the number of still-births was higher among primipara than among multipara.

(9) (a) There was a marked tendency for plural (twins and triplets) to be associated with multipara mothers. The median age of mothers producing plural births was also higher (27·28 against 24·45 for all cases).

(b) Infantile mortality rates were significantly greater in the cases of twin-births and triplet-births, compared to the rate among single-births.

(10) Percentage of male children was 51·8 for all labour cases and 43·4 for tedious labour cases. The difference was found significant for the period 1920—1928.

Hypertonic Glucose in Obstetrics and Gynecology

MATHEWS AND MAZZOLA (*Surg. Gynec. and Obstet.* May, 1936, page 781) observe that it has been found out experimentally that 50% glucose given intravenously into cats with reduced blood pressure produces a final sustained rise in blood pressure and pulse pressure and a diminution of the pulse rate and that the preliminary injection of hypertonic glucose (50%) makes the reduction of pressure from haemorrhage or trauma more difficult. The authors observe also that clinically they found out that intravenous use of hypertonic glucose is very efficacious both as a preventive and curative in secondary shock, dehydration and accidosis in obstetric and gynecologic cases. Preoperative use of glucose given in the same way fortifies the patient against the hazards of shock due to anaesthesia and the trauma of the operation. The authors found no reactions after intravenous administration of glucose even when given in large amounts.

TROPICAL DISEASES

A Clinical Comparison of Atebrin-Musonate With Quinine Bihydrochloride

FIELD AND NIVEN (*Transactions of the Royal Society of Tropical Medicine and Hygiene*, April, 1936, page 647—658) report on the comparative study made on 286 patients suffering from acute malaria treated with atebrin-musonate and quinine bihydrochlor. in the Institute of Medical Research, Federated Malay States. Half of the patients had atebrine and the other half quinine in alternating sequence. The authors observe that trophozoits tend to disappear from the peripheral blood and temperatures fall to normal earlier in atebrin-treated cases than in cases treated with quinine, that the minimal effective daily dose for an adult is 3·0 gm. of atebrin and it is given either intravenously or intramuscularly on two successive days. They further observe that the drug is absorbed from the muscles very quickly and gets in the circulation and can be demonstrated in 10 minutes in the urine. The authors note that relapses after atebrin-musonate treatment are fairly common.

Intravenous Adernalin in Malarial Spleen

ASCOLI (*Schweizer Med. Wschr.*, No. 49, 1935) reports very good results with adrenalin given intravenously in malarial splenomegaly. Minimum dose to begin with should be 1 in 100 of 1 *per mille* solution daily with a gradual increase to 1 in 90, 1 in 80, 1 in 70 and so on upto 1 in 10. Adrenalin causes palpable contraction of the spleen and gradually results in partial or total involution of the enlarged spleen. The author observes that with the diminution in the size of the spleen local pain disappears, dyspeptic troubles, and the feeling of distension in the epigastrium improves and there is also a improvement in the blood picture of the patient. The first injection causes a transient pallor of the face and as the dose is increased the

patient becomes tolerant to adrenalin. The first injection should be given with the patient fasting and the total quantity of adrenalin used will be at the most 3 mgms.

Pleuropulmonary Complications of Amoebiasis

OCHSNER AND DEBAKEY (*Journal of Thoracic Surgery*, February, 1936, page 225) report that pleuropulmonary complications of amoebiasis occurred in 15·8 % of 2,490 reported cases and in 15·7% of their 95 cases of amoebic liver abscess. The authors classify the pleuropulmonary amoebic infection into five groups (1) haematogenic pulmonary abscess without liver involvement (2) haematogenic pulmonary abscess and independent liver abscess, (3) pulmonary abscess extending from liver abscess, (4) broncho-hepatic fistula with little pulmonary involvement, (5) empyema extending from liver abscess. The clinical manifestations of pleuropulmonary amoebiasis are fever, cough with expectoration, diarrhoea, enlarged and tender liver, pain in the chest and cachexia. The expectoration of chocolate sauce pus is of diagnostic importance. There is a moderate leucocytosis without corresponding rise in polymorph cells. X-ray shows elevation and fixation of the diaphragm and a shadow at the base. The sputum or the aspirated material may contain amoebae. The prognosis of pleuropulmonary amoebiasis depends on the character of the lesions and the treatment adopted. The mortality rate of the collected cases was as high as 41·1%. The treatment is conservative, consisting of administration of emetine and aspiration when evacuation through the bronchus is not sufficient. Open operation is contraindicated unless there is secondary infection. The incidence of recovery in cases treated without emetine was 43·9 in the collected series and 40% in the authors' series whereas in cases treated with emetine it was 91·8% and 100% respectively.

PEDIATRICS

Tetany of the New-Born

GREENWALD AND PALINSKY, (*Acta paediat*, 17:386, 1935) write that "it was formerly held that tetany due to hypocalcemia does not occur in infants under 3 months of age and that it is always associated with active or healing rickets. In recent years this opinion has been revised. It is now known that tetany may occur in very young infants, even during the neonatal period, and that it may arise independent of demonstrable rickets. Numerous examples of tetany of the new-born has been reported since Kehrer's paper was published in 1913; in some of the reported cases the diagnosis has been based on insufficient evidence. Convulsions, alone or even when accompanied by Chvostek's sign or a positive peroneal reflex, are not pathognomonic of tetany in the new-born infant. A secure diagnosis of tetany at this age can be made only when the concentration of calcium in the blood serum is found to be significantly lowered. The mean value of the serum calcium of new-born infants is approximately 12 mg. per hundred cubic centimeters, instead of 10 mg. per hundred cubic centimeters as in older children. Hence, instead of the critical value of 7·5 mg. per hundred cubic centimeters established by Kramer and Howland for the diagnosis of tetany in infants, it seems fair to assume an arbitrary level of 8 mg. as the value to which the concentration of the serum calcium may fall before a diagnosis of tetany of the new-born can be made. An equally important diagnostic criterion is that the symptoms presumably produced by tetany show a specific response to calcium therapy.

The pathogenesis of tetany of the new-born is uncertain. Alkalosis resulting from vomiting has been suggested as a cause, but this explanation has been abandoned generally, at least with reference to the majority of cases. Deficiency of calcium in the diet of the mother during the period of gestation may conceivably play an important role; this point has not been adequately investigated. Anatomic injury to the parathyroid glands does not appear to be a generally dependable explanation, although it is likely that a temporary disturbance of the function of these glands may be inculcated in some cases. Unrecognized deficiency of vitamin 'D' requires more study.

Three cases of tetany in new-born infants are reported, together with the case of another infant whose behavior simulated tetany but who was suspected finally, on purely clinical grounds, of having suffered an intracranial hemorrhage. The value of electric reactions in the diagnosis of tetany at this age is not discussed. A good bibliography is appended. (Summary *Amer. Journ. of Diseases of Children*, Vol. 51. No. 4. April, 1936).

Calcium and Phosphorus Studies

SPELLING AND HOPPER (*Bull. Johns Hopkins Hospital*, March, 1936, page 137) report on the efficiency of viosterol as a preventive and curative of rickets and tetany in several hundred cases studied over a period of 6 years. Their diagnosis was based on physical examination, x-ray study of the bones, the determination of blood calcium and phosphorus and in some cases findings were corroborated by histological examination of the bones. They observe that (1) in full-term infants 5 drops of viosterol daily was efficacious in preventing rickets, (2) that in prematurely born infants and in babies growing at a rapid rate it is advisable to give 15 to 20 drops of viosterol daily for the first 3 or 4 months of life after which 5 drops can be used daily; (3) that the efficacy of a given dose of viosterol depend to a large extent on the severity of the disease, more severe cases requiring larger doses for being completely healed; (4) that the average duration for complete healing (by study of x-ray film) in the entire group of 134 cases comprising of all degrees of rickets and having doses of viosterol ranging from 15 to 60 drops daily was 3·7 months; (5) that amounts larger than 20 drops of viosterol daily were not always successful in inducing more rapid healing; (6) that they did not observe a single case of ricket totally refractory to viosterol but only one case of partial refractoriness was observed in a girl of ten treated with 20 drops of viosterol for a period of only 45 days; (7) that they observed marked symptomatic improvement by the administration of vicsterol in conjunction with calcium salts in more than 100 cases of tetany with a concomittant rise in blood calcium in cases where chemical analysis was made; (8) they did not find during this six years' experience any toxic effect of the drug though it was used in 30 to 60 drops daily in many cases for months together and they also did not find any evidence of toxicity in the tissues of 27 children who were biopsied.

Use of Blood Coagulant Extract from Human Placenta in the Treatment of Haemophilia

ELEY AND HIS COLLABORATORS (*Journ. of Pediatrics*, February, 1936, page 135) report very satisfactory results with tissue protein extracts prepared from human placenta in treating patients with haemophilia. The authors treated 15 children by oral and intramuscular (not intravenous) administration of human protein extracts and of these fifteen, 11 showed satisfactory response as evidenced by a reduction of the coagulation time to within 10 minutes and in the remaining 4 cases the reduction in the coagulation time was not very satisfactory. The authors further observe that there is a very striking difference in the results obtained in haemophilia with human tissue protein when compared with animal tissue protein.

Carcinoma of the Tongue in a New-Born Child

FRANK, ENFIELD AND MILLER (*Amer. Journal of Cancer*, April, 1936, page 775) in reporting a case of carcinoma of the tongue in a new-born child observes that the case is very interesting because it is the only case of carcinoma of the tongue in the new-born child that has been recorded and the patient is probably the youngest to receive radiation therapy for malignant disease. They observe that of 750 cases at the Mayo Clinic of malignant disease 56 were at the region of the mouth and of these 5 were squamous-cell carcinomas. They write that just after birth the child could not be nursed and on examination a swelling of the size of a pea was found on the left side of the tongue and on needling when no fluid was obtained section diagnosis was made and found to be papillary squamous-cell carcinoma. The tumor was operated on the 14th day and the raw surface was cauterised with electric cautery. To prevent metastasis x-ray treatment was begun 8 days after operation *i.e.*, 22 days after the birth of the child. The child had two series of treatment 6 weeks apart and in each series a total of 600 units was given to each side of the neck and face. The factors employed were 190 peak kilovolts, 5·5 mm. of copper and 1 mm. of aluminium filter, 50 cm. distance, 8 milliamperes. There was no skin reaction. The child could be nursed well 2 weeks after the operation and there is no sign of recurrence yet though two years have passed.

A FEW STEPS IN THE PROGRESS OF MEDICINE DURING 1935

DR. A. STOLINSKY

The Nobel Prize in Medicine for 1935 was awarded to Prof. Hans Spermann of Freiburg, Germany, for his researches on the minute embryonic cells from which animals develop.

The virus that causes the plant disease, tobacco mosaic, was isolated by Dr. W. M. Stanley, Rockefeller Institute, Princeton, N. J., as a crystalline protein, thus, according to Dr. Stanley, characterizing a new class of disease-producers and indicating that viruses may not be living substances in the sense that bacteria, plants and animals are.

Length of life can be predicted by measuring change of the eye lens' power of accommodation, early presbyopia indicating probability of a shorter than average life, Dr. Felix Bernstein, Columbia University, found from research on thousands of individuals in Germany.

First scientifically controlled test of the Park Brodie infantile paralysis vaccine was made by the U. S. Public Health Service on over 1,000 children during the North Carolina epidemic, but was inconclusive as no cases developed in either control or vaccinated groups.

Isolation of the active principle of ergot was announced by several investigators, working independently.

Heart muscle tone is the chief factor influencing the blood flow through the heart's arteries and should be considered in prescribing drugs for heart disease due to occlusion of these arteries, Dr. William B. Kountz, Washington University School of Medicine, reported.

Relief of several victims of hitherto hopeless Pick's disease (pericardial pseudocirrhosis of the liver) by surgical removal of part of the pericardium was reported by Drs. Paul D. White and E. D. Churchill, Massachusetts General Hospital, Boston.

Relief and apparent cure of a fatal type of high blood pressure by surgical operation was reported by a number of surgeons, working independently and using different surgical technics, among them Dr. Alfred W. Adson, Mayo Clinic; Dr. Max M. Peet, University of Michigan Medical School; Dr. Irvine H. Page, Hospital of Rockefeller Institute for Medical Research; and Dr. George J. Heuer, New York Hospital.

The effects of alcohol on which medical scientists agree have been summed up in a recent book by Prof. Haven Emerson of Columbia University as follows; 1. Alcohol is a narcotic which by depressing the higher centers, removes inhibitions. 2. Outside of the nervous system and the digestive tract, alcohol used as a beverage has little demonstrable effect. 3. It is a food, utilizable as a source of energy and a sparer of protein, but it is such only to a very limited degree. 4. It is improbable that the quality of human stock has been at all injured or adversely modified by the long use of alcohol, although the effects on the individual are often devastating. 5. The therapeutic usefulness and value of alcohol is slight. 6. It may be a comfort and a psychological aid to the aged. 7. It does not increase, and it sometimes decreases, the body's resistance to infection.

Ultraviolet rays, heat and calcium salts are three interrelated factors in the production of cataract, Dr. Janet Howell Clark. John Hopkins School of Hygiene and Public Health, found.

Cobra venom, in doses too small to be poisonous, relieves pain as effectively as morphine. But the venom of the death-dealing serpent is not habit-forming when given to relieve pain, as morphine is, and it does not produce the disagreeable and dangerous by-effects of the narcotic drug.—Experiments with cobra venom on laboratory animals and human patients, including a hundred sufferers from cancer in its late stages, were reported by Dr. David I. Macht, Director of Pharmacological Research Laboratory, Hynson, Westcott and Dunning, Baltimore, at the meeting of the National Academy of Sciences.

That bone formation is an ever-changing process in the body and not occurring only during youth is suggested by experiments just reported by two Danish scientists.

A campaign to establish the right of persons suffering from incurable disease to die was announced in London, after a British doctor was reported to have admitted five mercy slayings.

A link between high blood pressure and the fluid which bathes a portion of the brain has been found by Dr. Irvine H. Page of the Hospital of the Rockefeller Institute for Medical Research. This fluid contains a substance which brings about a high blood pressure by stimulating a portion of the diencephalon, it appears. While the discovery has significance, Dr. Page does not, however, claim that he has found the cause of high blood pressure.

Maternal instinct in young rats is due to the influence of prolactin, pituitary gland hormone, and can be aroused in young virgin rats by injections of this hormone (Drs. Oscar Riddle, Ernest L. Lahr and Robert W. Bates, Carnegie Institution of Washington).

Important aid for the treatment of liver disease and for preparing patients suffering from fatty livers for operation was the discovery by Drs. J. L. Bollman and F. C. Mann, Mayo Clinic, that the composition of the liver can be varied within wide limits by diet.

Breeding experiments with mice, reported by Dr. E. C. MacDowell, Carnegie Institute of Washington, indicate that occurrence of leukaemia is increased through inheritance on the maternal side.

Study, at many research centres, of electrical impulses generated by brain activity and known popularly as brain-waves shows that brain activity, like heart activity, is constant but unlike heart activity, proceeds at different rates during sleeping, waking, and mental processes; that epilepsy is a sort of neurological storm set off by stimulation of a convulsion-causing brain center; that different kinds of brain activity occur under different anaesthetic agents; and promises much future information about mental processes in health and disease.

Dr. William H. Howell, emeritus professor of physiology, Johns Hopkins University discovered that the blood platelets are formed in the lungs by giant cells called megacaryocytes.

Ventricular and auricular fibrillation may be caused by the external nerves of the heart (Drs. Louis H. Nahama and H. E. Hoss, Yale School of Medicine).

Cause of the paralytic disease, multiple sclerosis, may be clotting of blood in the small veins of the brain, possibly as a result of infection (Drs. Philip Solomon, Mary E. Dailey and Tracy J. Putnam, Harvard Medical School).

The world's record smallest viable baby, weighing one pound at birth, was born in El Paso, Texas.

New evidence for the resonance theory of hearing was found by Dr. Elmer Culler, University of Illinois, and Dr. S. S. Stevens, Harvard, who, working independently, mapped the basilar membrane, locating experimentally the areas where each frequency range is picked up. Very intense noise causes deafness for pitches other than that of the stimulus and injury in the ear's organ of Corti at points not involved in picking up moderate tones of similar pitch, researches at Harvard, Clark, and Princeton University indicated, providing evidence that the resonance theory of hearing may need modification. Evidence that the stimulus to the nerve of hearing is chemical and not electrical was obtained in researches by Drs. A. J. Derbyshire and H. Davis, Harvard Medical School. A loud high-pitched sound produces more ear strain and greater loss of hearing if it is interrupted every second instead of being continuous (Dr. Elmer Culler and Glen Finch, University of Illinois).

Electrical impulses generated in the brain during sleep and dreams are paralleled in the case of deaf-mutes by similar impulses in the hands and arms, which they use in speech (Dr. Louis W. Max, New York University).

An international clearing-house for serums used in treating, diagnosing or preventing disease was established at the Royal Danish Serum Institute, Copenhagen, by action of the Congress of Biological Standardization in connexion with the League of Nations Hygiene Congress.

First step toward a simpler, cheaper, and safer method of making Rocky Mountain spotted fever vaccine was apparently taken by Dr. F. E. Deyer

and Ida A. Bentson, U. S. National Institute of Health, when they succeeded in growing the virus of this fatal disease on chick embryos.

A new, physiological approach to methods for correction of stuttering was suggested by the finding of Hazee Geniesse, University of Michigan, that walking on all fours enabled stutterers to speak normally.

First definite evidence of a vitamin participating directly in a physiological process was found by Dr. George Wald, Harvard University, who found vitamin 'A' in the eye's retina and active in vision.

Choline, produced by the pancreas, is a vitamin essential for liver function and probably an important factor in control of diabetes (Drs. C. H. Best, co-discoverer of insulin, M. Hershey and Miss M. E. Hunstsman, of the University of Toronto).

Evidence presented by Dr. L. G. Rowentree and colleagues indicates that extract of pineal gland causes precocity of sexual development and premature cessation of body growth.

A new function of the pituitary gland, control of the reticuloendothelial system, which is concerned with production of new blood cells and destruction of old ones, was indicated in experiments of Prof. E. C. Dodds, Courtauld Institute of Biochemistry, and Dr. R. L. Noble, London. Effect on the body of thyroid gland hormone and thyroid stimulating hormone of the pituitary gland is greatly influenced by temperature, lowered metabolic rate being produced by either of the hormones when given at 59 degrees Fahrenheit (Drs. Oscar Riddle, Ernest L. Lahr and Robert W. Bates, Carnegie Institution of Washington).

Chemical analysis of crystals of the fertility vitamin 'E' shows it to be a quite complex higher alcohol (Drs. H. M. Evans, O. H. Emerson and G. A. Emerson, University of California).

A repetition, with girls (Florie and Margie), of the twin experiment in which one child was given training while the other was left unstimulated, confirmed previous findings (Jimmy and Johnny) that learning of certain skills depends upon maturity as well as opportunity to learn (Dr. Myrtle B. McGraw, Babies Hospital, New York).

A movement of psychiatrists against the insanity of war was initiated when the Netherlands Medical Association's Committee on War Prophylaxis sent to statesmen of the world a warning against war psychosis, signed by 339 psychiatrists of 30 nations.

Removal of all but a small portion of the frontal area of the brain with no impairment of intelligence in the patient, but increased concentration, was the result of an operation performed by Dr. Glen Spuring, University of Louisville, and reported by Dr. S. Spafford-Ackerly.

A new food factor necessary for the growth of chickens was discovered by Dr. H. Dam of Copenhagen, and named vitamin K.

The Cameron Prize of the University of Edinburgh was awarded to Prof. Julius Wagner V Jauregg, University of Vienna, for his discoveries in treating dementia paralytica.—(Reprinted from *Ars. Medici.* April, 1936, pp. 147—150).

MEDICAL NOTES AND NEWS

MOVE FOR DISTRIBUTION OF WEALTH

A call to scientists to organise to redress the wrongs of the poor was made recently by representatives of science at the University College, London. The meeting which called attention to the abuse of science, was organised by the Association of Scientific Workers.

Professor P. M. Blackett, one of the world's greatest authorities on Cosmic Rays and the mysteries of space, using logarithmic curves and formulae showed the grotesque maldistribution of the nation's wealth. "As scientists we increase the nation's wealth", he declared. "Supposing our work leads to an increase of 10 per cent. in the nation's wealth, who gets it?" He showed that the few people with £100,000 a year received a £10,000 a year increase, and the people with £100 a year received a £10 a year increase. "We are not interested in increase of the income of the £100,000 a year class, we are interested in the lowest 600,000 who live, or do not live on £140 a year. What had to be determined was how, by taxation and socialisation, the wealth of the nation could be redistributed.

Dr. Joseph Needham, the Cambridge embryologist, pointed out that the Government budgeted for science as follows: Medical Research £140,000: Industrial Research £440,000; Army Navy and Air Force Research £2,750,000; of which £150,000 was spent on gas research. "We are spending more on one item of destruction—gas—than we are on medical research to save life. Science is being applied all the time for things directed to the destruction of civilisation, and not the wealth, welfare and happiness of humanity."

Dr. Bernal, the physicist, said that it was the scientist's duty to see how available knowledge was being used, and how much could be done. "It is quite clear that between 70 and 80 per cent. our population do not die a natural death. They have between 10 and 15 years of their lives cut off by preventible causes. We are living in a diseased society. Scientific workers must 'organise, they must carry out researches into social needs, and they must see that the knowledge was available to politicians and that they apply it."

Dr. Marrack, the biologist attacked the Ministry of Health for its cynical attitude to the food problem. From 20 to 25 per cent. of our children he said, were living on diets, which were not adequate in any of the essentials.

BRITISH ASSOCIATION REPRESENTATIVES TO INDIAN SCIENCE CONGRESS

The British Association of Great Britain, it is understood, has for the first time in its eventful career decided to hold a joint session with the Indian Science Congress in January, 1938 in India.

The occassion is particularly memorable for this country because it celebrates then the Jubilee of the Indian Science Congress. For climatic reasons and partly for the fact that it has already accepted the invitation to hold its session in 1938 in Great Britain the British Association cannot in the circumstances, partake in the joint session in India fully and has therefore decided to send to India on the occasion a strong delegation of prominent scientists. About 50 scientists are expected to attend the session, including some from outside the British Empire.

The Indian Science Congress it is understood, is making necessary efforts to take advantage of the presence of these distinguished scientists with a view to bring them in contact with scientific workers in different centres in India. This arrangement, it is expected, will give an impetus to the scientific activity in India. Lectures by these foreign scientists and discussions with them will be made possible in different scientific centres.

Whenever the British Association has held its session in a dominion, that particular country, it is understood, makes a handsome contribution towards the expenses of that session. The Indian Science Congress approached the Government of India for a

similar contribution for the occasion and, it is understood, that the Hon. Sir Jagdish Prasad, Member in charge of Education, Health and Lands, has promised to consider the subject sympathetically. It is expected that like the dominion Governments the Indian Government will contribute when the joint session of the two premier scientific bodies of Great Britain and India meet for the first in India. In fact this is the first time that the British Association is holding a joint session with another scientific body.

Letters have been received by the Universities in India from the Indian Science Congress explaining the significance and importance of the session and, it is understood, that already two universities have extended their invitations to the Indian Science Congress to hold its joint session with the British Association under their auspices in January 1938. They have also expressed the hope, that if their invitation were to be accepted they would supplement the grant that the Science Congress would be receiving from the Government by raising the necessary funds.

Apart from these two universities, it is expected, that financial assistance to the Indian Science Congress will be forthcoming from other universities and princes and also from private individuals with a view to meet its present needs and to put it on a sound financial basis.

It is understood that His Excellency Marquess of Linlithgow has agreed to be the patron of the joint session.—*A.P.I.*

RECOGNITION OF INDIAN DEGREES

A communique issued by the Indian Medical Council states:

"A telegram has been received from the Registrar General Medical Council, Great Britain, to the effect that Medical qualifications of the universities of Bombay, Lucknow and Madras have been recognized with effect from February 25, 1930 and that the degree of M.B.B.S. of the University of Patna has been recognized when granted on or after May 11, 1935. The qualifications of the three older universities were recognized previously only upto February 24, 1930. The significance of the retrospective effect of this notice is that now there will be no gap in the recognition of these degrees by the G.M.C. In the case of Patna medical qualifications, which are of later establishment and have not previously been registrable in Great Britain, the date of the Government of India notification admitting M.B.B.S. degrees to the first schedule of the Indian Medical Council Act is the date named for their recognition by the G.M.C. The Medical Council of India having considered the reports of its inspectors on these universities recently informed the G.M.C., Great Britain, that it considered their courses of study and examinations to be satisfactory. The medical degrees of the remaining universities of India are still under consideration of the Medical Council of India.—*A.P.I.*

MILK FOR THE NATION

It appears probable that shortly an enquiry would be instituted in typical villages in various parts of the country to ascertain the sources of milk-supply in the countryside, and the extent to which villagers drink milk. The nature of these enquiries and the aspect of statistics to be collected for the purpose would be made public as soon as the details have been fully worked out.

This, too, is in pursuance of the Viceroy's campaign for making people, especially mothers and children, drink more milk.—*A.P.I.*

ORGANIZING HEALTH INSURANCE

The possibilities of adopting a health insurance scheme, about which some members of the Assembly pressed the Government at the last session, have been examined. The Local Government have been asked to submit reports. One or two of them have already done so. The Government of India should be in a position to arrive at conclusions by the end of October next.

It is not expected that any proposal will be put up to deal with the matter legislatively, but the Provincial replies may indicate the desirability of a thorough enquiry into this most complicated question. Hitherto, the difficulties caused by the size of the country and the unorganized state of industries and of labour have stood in the way of serious consideration of the question. In England, health insurance was made possible only with the help of properly organized Trade Unions.—*A.P.I.*

RECRUITMENT TO I. M. S.

The following communique has been issued: The Secretary of State for India in Council announ-

ces that the Selection Board will meet at Simla on August 19 to select a few Indian candidates for permanent Commissions in His Majesty's Indian Medical Service. Applications are invited from statutory Indian and Burmese medical men who possess qualifications registrable by the General Medical Council of Great Britain or included in section 11 (1) of the Indian Medical Council Act, 1933. The applicants should not have attained their 32nd birthday, on the 1st November, 1936, except in the case of temporary commissioned officers now serving or demobilized who will be given an allowance for their service in the I.M.S.

Applications on prescribed forms, which can be had from the office of the Director General of the I.M.S., Simla or the Secretary to the Military Department, India Office, London, together with the necessary documents, must reach the Director General of the I.M.S., or the Secretary to the Military Department, India Office, London, not earlier than Thursday, July, 16.

The candidates who have already submitted applications to the Director General in India and have received acknowledgements need not resubmit them. It is likely that the future recruitment of Indians to permanent Commissions in the I.M.S., will be made only from among officers holding temporary Commissions.

RED CROSS TO ENROL NURSES

A press communique issued by the Headquarters of the Indian Red Cross Society, Simla, says:—

Nurses in India will be interested in the scheme recently launched by the Managing Body of the Indian Red cross Society for the maintenance of a Roll of Trained Nurses for emergency or war service. This scheme has been drawn up by the Indian Red Cross Society in conjunction with the Trained Nurses Association of India, and the Medical Directorate, Army Headquarters, has also agreed that, in the event of war, it will make use of the Roll for the selection of such nurses as may be required for military service, to supplement the regular army nursing services.

By enrolling, a nurse undertakes to respond to calls for service either in war or in disasters or in both. The Indian Red Cross Society will be responsible for the maintenance of the Roll, and will communicate with the nurses at regular intervals. All information regarding pay on mobilization together with Enrolment Forms can be obtained from the Organising Secretary, Indian Red Cross Society, "Sherwood", Simla.

YELLOW FEVER MENACE

The Government of India have issued a notification under the Epidemic Diseases Act, forbidding entrance into India of persons, within nine days of their being in an area in which yellow fever exists, or is suspected to exist. The Government have been compelled to take this action, as it is only recently that the development of air transport has brought Karachi within nine days of their being in an area in which yellow fever exists, or is suspected to exist in suspected areas in South Africa. This is only a temporary and emergency measure and will be discontinued as soon as satisfactory quarantine arrangements at the Karachi air port, which have been sanctioned are completed.

The yellow fever is an epidemic and endemic disease, which has devastated the west coast of Africa and tropical America. It is spread by the 'stegomyia' type of mosquitoes, a variety of which is found all over Northern India. The ordinary period for the incubation of the disease does not exceed six says, but the patient may be undetected for another three days. With the speeding up of the air traffic between Africa and India, it takes less than this period, between Egypt and India for a person to travel from the affected areas to Karachi. It is to avoid this grave risk to the health of the people of India that the Government are taking these measures.

The following notification has been issued:—

"In exercise of the powers conferred by section 2 of the Epidemic Diseases Act, 1897 (III of 1897) the Governor-General-in-Council being satisfied that India is threatened with an outbreak of yellow fever, is pleased to direct (1) that no person shall arrive in India by any aircraft, whether as passenger or member of the crew, within nine days of his being in an area in which yellow fever exists, or in which, though the disease has not been clinically demonstrated, there is a presumptive evidence, as a result of mouse-protection tests, that the disease has occurred in the area, unless he has been protected by satisfactory inoculation, or previous attack of the

disease, and (2) that no aircraft, which has started from or alighted in any such area, shall enter India." —*A.P.I.*

INDIAN ANTHROPOLOGICAL INSTITUTE

In response to a general desire among the leading antropologists of India, a central Anthropological Association has been formed with its headquarter in Calcutta under the name and title of the Indian Anthropological Institute Dr. J. H. Hutton, D.Sc., C.I.E., I.C.S., is the President and Dewan Bahadur L. K. Ananthakrishna Iyer and Rai Bahadur Sarat Chandra Roy are the Vice-Presidents of the Institute. Mr. K. P. Chattopadhya is the Treasurer and Dr. B. S. Guha and Dr. Panchanan Mitra are the Secretary and Joint Secretary respectively of the Institute.

The Institute proposes to hold regular periodical meetings and promote anthropological research in India on scientific lines and publish a half-yearly journal for which Mr. Shyamaprasad Mukherjee, the Vice-Chancellor of the Calcutta University has it is understood, promised help.—*A.P.I.*

SEPARATE CIVIL MEDICAL SERVICE

The Council of State in a full-dress debate on Lala Jagdish Prasad's resolution that a separate civil medical service should be established independently of the I.M.S. raised such important issues that in addition to Major-General Sprawson, the Education Member also took part in the discussion. The motion was, however negatived.

Lala Jagdish Prasad, who had evidently studied the history of the question with some care, referred to the intensity of public feeling on the present practice of dumping army doctors on the civil administration. As an instance he mentioned that in the United Provinces 15 districts were reserved for European I. M. S. officers. "The principle of I. M. S, recruitment," he said, "is inherently unsound and vicious." Were the medical needs of the civil population numbering so many millions to be subordinated to the supposed needs of the argument that British doctors were necessary for giving medical attention to British officers and their families.

Major-General Sprawson frankly admitted that the organization of the I. M. S. was based fundamentally on the needs of the country in war time but he maintained that considered from any point of view it was the most economical and satisfactory system. In the event of war, they would have to find a certain number of trained doctors for immediate duty. So far as the British section was concerned they required a reserve of 134 British officers for war duty. How were they to provide them? It was absurd to suggest that they should have these men in the Army doing nothing. On the other hand the provinces required a certain number of British officers for giving medical aid to British officers in the civil administration. So by sending British I. M. S. officers to the provinces they satisfied both the needs. It was not possible, he said, to get this number of British officers in the A. I. R. O. The Major-General then tried to show that the suggestion to recruit the necessary number of British officers on short-term contract for the civil administration was both costly and impracticable.

Mr. P. N. Sapru followed with a smashing rejoinder to the Major-General. In his opinion it had not been satisfactorily explained why they should not have British officers separately for the civil side on short-term contracts. His complaint was that they did not take into account the interests of 350 million of people but of the British Army and the British personnel of the services. This, he said, was not a fair method of approach. He also questioned the need and propriety of assuming that only British doctors could treat British officers and their families. Were there not over a thousand Indian doctors practising in England where competition was much more severe? Was it not a fact that even Indian doctors had thousands of European patients?

Mr. Sapru further stated that the quality of I. M. S. officers was deteriorating and that as junior and inexperienced I. M. S. men were sent to the provinces, they were not getting their money's worth. He also pointed out that local Governments and provincial ministers were not happy under the present system. He characterized reservation of particular districts for European I. M. S. officers as racial discrimination in its worst form. In the end he declared. "It is the services which dominate the policy of the Government, not the people of India."

Sir Jagdish Prasad, tried to meet the arguments of Mr. Sapru. According to him the real problem was—how can we get an effective war reserve on

the most economical terms? The present system, he argued, satisfied this test. The Education Member carefully avoided discussing the merits of the question whether it was right to insist that British officers and their families could be treated by British doctors alone. Referring to the Lee Commissioner's report, he said, "If British officers are to come here, they must have an assurance that they and their families will be treated by doctors of their own race." As an additional argument he mentioned that the total number of British medical officers in the provinces was only 112. It appeared significant that so far as the merits of the policy of providing British doctors for British officers was concerned, he was anxious not to commit the Government of India to any definite expression of opinion. After saying, "Whether you agree or not, this is the argument on the other side" he concluded by saying that the ultimate decision on the subject lay in the hands of the Secretary of State. He however, sought to prove that it was not a question of racial discrimination. The fact was, said Sir Jagdish that as European officers wanted to be treated by European doctors, they could not be forced against their will, for in that case they would refuse to come out to India.

DIPHTHERIA MENACE IN BOMBAY

A letter from the Dean of K. E. M. Hospital and the G. S. M. College, Parel, proposing to conduct an inquiry into the important and urgent problem of diphtheria bacilli, steadily on the ascendancy in the cases of school-going children of the city was considered at a meeting of the School's Committee.

The letter requested the permission of the Acting Secretary of the Schools' Committee to the proposed inquiry into the incidence of diphtheria among school-going children. The Committee granted the permission.

In the course of the letter, the Dean pointed out that the disease was becoming an epidemic in the city and that the admission of patients suffering from the disease in the City Isolation Hospital had been steadily increasing as could be seen from the annual report of the Executive Health Officer.

The report for 1934 showed that the total number of such patients treated for the year had jumped from 30 in 1930 to 99 in 1934.

The letter further stated that the proposed inquiry would be conducted in the Pathology and Bacteriological Department of the G. S. M. College. It has been proposed by the experts to take swabs from the throats of the children in the various schools under the Schools Committee with a view to finding out the carriers of diphtheria bacilli in the throats and also in order to have an idea of other organisms commonly found along with them.

It would thereby be possible to minimise the spread of the disease in the city.

They have further referred to the extract from the Annual Report of the Executive Health Officer, in which it is stated as follows:

"It will be seen from the above that there is no improvement in the death rate, as these cases are not detected early and hence removed to hospital in late stages when the heart is affected and when the specific treatment is of no avail."

The Acting Secretary after stressing the importance and urgency of the problem, as the infection was more common in children below 10 years of age, added that the work would be undertaken in full co-operation with the headmasters of the various municipal schools.

Permission having been granted by the Schools Committee, the Acting Secretary has proposed to depute Dr. P. N. Ojha, Resident Pathologist of the K. E. M. Hospital, to take swabs from the throats of the school children.

FAR EASTERN CONFERENCE ON RURAL HYGIENE

The Preparatory Committee for the Far Eastern Conference on Rural Hygiene consisting of Dr. A. S. Haynes (Chairman) formerly Colonial Secretary of the Malay States, Prof. C. D. de Langen, Honorary Dean of the Faculty of Medicine of Batavia and Dr. E. J. Pampana of the Health Section of the League Secretariat is now touring the countries of the Far East, to ascertain on the spot what the problems of rural hygiene are, with which the Conference of 1937 could usefully deal. The final agenda of the Conference and the documentary material at its disposal will be settled in the light of this preparatory study.

The Preparatory Committee will call the attention of the countries visited to the fact that at the

European Conference on Rural Hygiene in 1931 the delegations considered of administrators, and health officials, together with engineers and experts with special knowledge of economic and social questions affecting rural hygiene. It is hoped that similar delegations will be appointed for the Far Eastern Conference and that there will also be experts on such questions as education, the co-operative movement, rural reconstruction, and last, but not least, nutrition. It will be remembered that the League Mixed Committee on Nutrition, which met in February, laid particular stress on the importance of the problem of nutrition in the Far East and asked that this question should be placed on the agenda of the Rural Hygiene Conference in the Far East as well as on that of the forthcoming Congress of the Far Eastern Association of Tropical Medicine. It is expected, indeed, that this will be among the chief items of the Rural Hygiene Conference's agenda. The Preparatory Committee is being assisted by the Far Eastern Bureau of the Health Organization at Singapore. The Advisory Council of this Bureau is circulating a questionaire to the Far Eastern Health Administrations with which it is in touch for the purpose of collecting material on the main problems of rural hygiene existing in the Far East.

The International Institute of Agriculture and the International Labour Office are participating in the preparatory work for the Conference and will be represented at it.—*A.P.I.*

BENGAL OBSTETRIC AND GYNECOLOGICAL SOCIETY

A large number of noted obstetricians and gynecologists of Calcutta assembled at an informal meeting on the 14th. June, 1936, to discuss the feasibility or otherwise of starting an association for the advancement of knowledge in Obstetrics and allied subjects.

By a unanimous resolution such an association was formed under the name of "The Bengal Obstetric and Gynecological Society" with the aforesaid aims and objects.

All informations regarding the society may be had from the Convener, 148 Russa Road, Calcutta.

DR. TIRUMURTI

Rao Bahadur Dr. T. S. Tirumurti, Professor of Pathology, Medical College Vizagapatam, was appointed for the fourth time to act as its Principal for six weeks during the absence of Major J. W. A. Ebden, on leave from May, 18.

Dr. Tirumurti acted as Vice-Chancellor of the Andra University on many occasions and recently delivered the convocation address of that University.

He will also act as the Chief Medical Officer of the Harbour for a second time.

CALCUTTA UNIVERSITY FELLOWSHIP

His Excellency the Chancellor has been pleased to nominate Dr. Karuna Kumar Chatterji, L.M.S., F.R.C.S., to be an Ordinary Fellow of the University *vice* Sir Kedarnath Das, KT., C.I.E., deceased.

GHOSE TRAVELLING FELLOWS

The Ghose Travelling Fellowships for the year 1936—37 in Scientific Subjects have been awarded to the undermentioned persons to enable them to prosecute advanced study and research in accordance with the scheme noted against their names:—

1. Subodh Chandra Ray, Esq., M.A., B.L.
   Subject—Education of the Blind.

Institution.—The Royal Normal College, London, or The Perkins Institution for the Blind, Massachusetts, U. S. A.

2. Dhirendranath Banerjee, Esq., M.B. (Cal.), M.D. (Berlin).

Subject—Cholera Kidney.

1. With Prof. Volhard and Prof. Fahr in Frankfurt A/M (Germany) for 4 months.
2. With Prof. Roessle, Director, Path Institute, University of Berlin, for 2 months.
3. With Miss Dorothy Russell, London Hospital, for 1 month.

Subject—Cholera Toxin.

4. With Prof. Besredka, Asst. Director, Pasteur Institute of Paris, for 5 months.

A special feature of this year's awards is that one of the persons selected, Mr. Subodhchandra Ray, whose subject of research is "Education of the Blind", is himself blind. As such, Mr. Ray is in a better position to judge of the difficulties of the blind.

SIR J. C. BOSE PRIZE

Kaviraj Dhirendranath Ray Esq., M.Sc., has been the recipient of the Sir J. C. Bose Prize for a monograph on "A critical study of Hindu Medicine" awarded by the University of Madras. The subject of his thesis was "The Tridosha Theory of Ayurveda".

DEUTSCHE AKADEMIE SCHOLARSHIPS

India Institute of the Deutsche Akademie is glad to announce the award of 17 (seventeen) new scholarships for the academic year 1936—37 to the following Indian graduate students who are to carry on higher studies in various German Universites:

MEDICINE.—1. Mary K. Das and Taraknath Das-Scholarship.

Recipient: Miss Usha Haldar, M.B.B.S., Lady Hardinge Medical College, Delhi.

2. Robert Koch-Scholarship.

Recipient: Mr. G. S. Guha, M.B. University of Calcutta; Surgeon in Shillong (Assam).

MATHEMATICS.—3. Ashutosh Mukherjee-Scholarship.

Recipient: Suprasanna Sengupta, M.Sc., University of Dacca; Observer, Indian Meteorological Department, Rangoon.

INDOLOGY.—4. Sir Ramkrishna Gopal Bhandarkar-Scholarship.

Recipient: Mr. Aryendra Sharma M.A., University of Allahabad.

5. Friedrich Ruckert-Scholarship. (This scholarship was primarily destined for studies in German language and literature; on account of the excellent application submitted for studies in indology the scholarship was this year awarded for this branch of studies).

Recipient: Mr. R. N. Dandekar, M.A., University of Bombay; Professor of Sanskrit, Fergusson College, Poona.

CHEMISTRY.—6. Justus von Liebig-Scholarship.

Recipient: Mr. N. K. Seshadriengar, M.Sc., University of Calcutta; research scholar, Indian Institute of Science, Bangalore.

7. Carl Duisberg—Scholarship.

Recipient: Mr. Basudeb Banerjee, B.Sc., and research scholar University of Calcutta.

PHYSICS.—8. Heinrich Hertz-Scholarship.

Recipient: Mr. N. K. Saha, M.Sc., University of Calcutta; research scholar University of Allahabad.

9. Sir J. C. Bose-Scholarship.

Recipient: Mr. A. K. Dutta, D.Sc., University of Allahabad, research scholar Bose Research Institute, Calcutta.

ENGINEERING.—10. Oskar von Miller-Scholarship.

Recipient: Mr. N. Anjaneyulu, B.Sc., Benares Hindu University; Electrical Instructor., Armature Winding Shop and Tosting Laboratories of the Government Technical School, Lahore.

ARCHAEOLOGY.—12. Heinrich Schliemann- Scholarship.

Recipient: Mr. T. Balakrishnan Nayar, M.A., University of Madras and University of London; Lecturer in History and Archaeology, Annamalai University.

VETERINARY SCIENCE.—13. Wilhelms Ellenberger-Scholarship.

Recipient: Mr. P. C. Nag, G.B.V.C., Calcutta, Veterinary Assistant Surgeon, Sylhet.

AGRICULTURE.—14. Albreche von Thaer-Scholarship.

Recipient: Mr. Panchanan Maheshwari, M.Sc., D.Sc., University of Allahabad; Lecturer in Botany, Agra College, Agra.

MINING.—15. Adolf Ledebur-Scholarship.

Recipient: Mr. B. S. Sanjeeva Reddi, Graduate, Indian School of Mines, Dhanbad, post-graduate Colorado School of Mines, Golden, Colo. (U. S. A.).

FINE ART.—16. Jakob Grimm-Scholarship. (This scholarship was primarily destined for studies in German language and literature; on account of the excellent application submitted for studies in fine arts the scholarship was this year awarded for this branch of studies.)

Recipient: Miss Sheila Bonnerjee, artist, Calcutta.

ECONOMICS.—17. An additional scholarship has been awarded to Mr. Basheshar Nath Tandon, M.A. (Economics) University of Agra and University of Calcutta; Professor of Commerce, Meerut College, Meerut.

The scholarship-holders are due to reach Munich on September 1st.

ASSOCIATION NOTES

CENTRAL COUNCIL

A misapprehension seems to pervade the minds of certain members of the profession that Government servants are debarred from joining the Indian Medical Association as members, in accordance to Government Servants Conduct Rules. With a view to dispel this misconception it has been considered expedient to give publicity to the following correspondence between the Joint Secretary, Indian Medical Association and the Surgeon-General with the Government of Bengal, and the Deputy Secretary to the Government of India.

GOVERNMENT OF BENGAL

No. 8062/10A-7-35.

From

The Surgeon General with the Govt. of Bengal.

To The Jt. Hony. Secretary,
Indian Medical Association,
67, Dharmatala Street, Calcutta.

Calcutta, dated the 6th March, 1935.

Sir,

I have the honour to acknowledge the receipt of your letter No. XX/376 dated the 21st February, 1935, on the question of participation of Government medical officers in the Indian Medical Association. The decision communicated in Government of India letter No. F.49-21/32H dated the 13th July 1933 was duly circulated to all subordinate officers, In the circumstances no further action in the matter appears necessary.

I have the honour to be,
Sir,
Your most obedient servant,
Sd/- Illegible,
for Surgeon-General with the
Govt. of Bengal.

GOVERNMENT OF INDIA

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

Simla, the 13th July, 1933.

No. F. 49-21/32-H.

From

R. H. Hutchings, Esquire, I.C.S.,
Offg. Deputy Secretary to the Govt. of India.

To

Dr. K. S. Ray, M.A., B.Sc., M.B., Ch.B. (Edin.),
Jt. Hony. Secretary, The Indian Medical Association,
67, Dharmatala Street, Calcutta.

Sir,

I am directed to acknowledge the receipt of your letter and telegram noted in the margin and to say that a reply to your letter No. Genl. 87, dated the 3rd April, 1933, was not sent earlier in view of the further communication foreshadowed in your letter dated the 25th April.

Letter No. Genl. 87 dated the 3rd April, 1933.
Telegram dated the 25th April, 1933.
Letter No. Genl. 139, dated the 25th April, 1933.
Letter No. Genl. 207, dated the 17th May, 1933.

2. With reference to your letter No. Genl. 207, dated the 17th May, 1933, I am to state that if rule 2(i) of the Rules of the Indian Medical Association is deleted, the provisions of sub-rule (2) of rule 23 of the Government Servants' Conduct Rules will not act as a bar to Government servants joining the Association. I am to add that it is not usual for Government to issue notifications permitting Government servants to join Associations and that the Government of India see no reason to depart from their usual practice in the case of your Association.

I have the honour to be,
Sir,
Your most obedient servant,
Sd./- R. H. Hutchings
Offg. Deputy Secretary.

RULE 2 (i) WHICH HAS SINCE BEEN DELETED:

"Support the candidature of a member or members of the Association for any medical or legislative bodies or any public body in which questions affecting public health, the medical profession, medical education and medical relief are considered."

DACCA BRANCH

A special meeting of the Medical Practitioners of Dacca was held under the auspices of the Indian Medical Association on 11-5-36 at 7 p.m. in the Jagannath Intermediate College.

Dr. P. C. Sen, Health Officer, Dacca Municipality, presided. A large number of medical practitioners of Dacca both members and non-members attended. Dr. K. S. Ray, Jt. Hony. Secretary, Indian Medical Association, Dr. S. Mitra and Dr. B. Mitra of Calcutta were also present in the meeting.

The following resolutions were moved from the chair and passed unanimously, all standing.

"Resolved that this meeting places on record its deep sense of sorrow and profound loss at the sad demise of Dr. M. A. Ansari, late President of the Association and a great patriot."

Resolved that a copy of this resolution be sent to the members of the bereaved family.

As no other business could be done after the above resolution the meeting terminated. An informal discussion with Dr. K. S. Ray, Jt. Secretary, I.M.A., followed in which he explained the need of joining the Association and suggested ways and means for improving the condition of the medical profession.

FARIDPUR MEDICAL ASSOCIATION

An Emergent meeting of the Faridpur Medical Association was held in the Laboratory Hall at 11-30 a.m. on the 13th May, 1936 with Dr. P. L. Chowdhury in the chair.

Doctors Present:—P. L. Chowdhury, S. R. Ghose, A. C. Mitra, H. Ahmed, R. C. Biswas, S. Sinha, J. N. Roy, S. Saha, A. Wahed Khan, S. Bose, S. Bhattacharyya and J. Chatterjee.

The following resolution was passed:

"This Association places on record its deep sense of loss at the sad and untimely death of Dr. M. A. Ansari, M.D., M.S., an eminent physician of all-India fame, Ex-president of the Indian Medical Association and the Indian National Congress.

"It also conveys its sincerest condolence to the members of the bereaved family."

SATYARANJAN GHOSE
Honorary Secretary.

JHANSI MEDICAL ASSOCIATION

The following condolence resolutions were passed at a meeting held on May 28, 1936:

1. This Association has learnt with great sorrow the sad death of late Dr. M. A. Ansari, a past President of the I. M. A., who did a great deal to organise the Medical Profession in India and expresses its deep sympathy with Begum Ansari and other relatives in their sad bereavement.
2. This Association has learnt with great regret the death of late Sir Kedarnath Das, the greatest gynaecologist in India and expresses its deep sympathy with his relatives in their loss.
3. This Association mourns the death of late Dr. K. M. Nadkarni, who did so much to popularise Indian Drugs and expresses its deep sympathy with his son Dr. S. K. Nadkarni and other members of his family.
4. This Association has learnt with regret the sad and very untimely death of Captain P. Shannon, a very promising young doctor in the I.M.S., and expresses its sympathy and sorrow with Mrs. Shannon in her loss.

H. N. SHIVAPURI,
Honorary Secretary.

LUCKNOW MEDICAL ASSOCIATION

The members of the Lucknow Medical Association met at an emergent meeting and passed the following resolution of condolence, all standing.

"The members of the Lucknow Medical Association deeply mourn the sudden and untimely demise of Dr. M. A. Ansari,

a leading medical practitioner and a great political leader of India and convey their heart-felt condolence to the bereaved family at the irreparable loss".

THE TINNEVELLY DISTRICT MEDICAL ASSOCIATION

The Tinnevelly District Medical Association held its monthly meeting at Palamcottah on Saturday, the 23rd May, 1936. Members numbering 54 including 5 lady doctors were present on the occasion.

The following interesting operations were demonstrated in the Operation Theatre by Lieut.-Col. T. S. Shastry, I.M.S., from 9 a.m. to 12 noon.

1. Right Reducible Inguinal Hernia—Fascial Suturing.
2. Ligature II, one side for prostatic enlargement or Steinachs' rejuvenation operation.
3. Skin-grafting of a motor injury case.
4. Application of plaster of Paris.

About 15 doctors, attended the clinical demonstrations in the theatre and wards. The following are some of the interesting clinical cases demonstrated to the members and explained to them by Lieut.-Col. T. S. Shastry, I.M.S.:—

1. Radical operation for cancer of breast—primary skin-grafting.

At 4-30 p.m. the tea-party began and the meeting started under the presidentship of Lieut.-Col. T. S. Shastry, I.M.S., at 5-30 p.m.

The following resolution regarding the demise of Dr. M. A. Ansari, M.S., M.D. (Edin.), was moved by the President in a feeling speech, and passed all the members standing:—

"Resolved to place on record the Associations' keen sorrow at the sudden and untimely demise of Dr. M. A. Ansari, M.S., M.D. (Edin.), who was one of the ablest physicians and surgeons of the country and a Vice-President of the Indian Medical Association."

The Secretary read the minutes of the monthly meeting held at Tiruchendur on 25-4-36, which were passed. The resolution of Dr. V. Sankarasubban, M.B.B.S., regarding the subscription was then taken up; and after a keen and exhaustive discussion, the resolution was put to vote—six voted for and thirty-four against it and so it was declared lost. The subscription therefore stands at one rupee per mensem, and the president requested the members to pay up now without hesitation all their arrears.

The consideration of Dr. Rama Rao's Bill on College of Physicians and the Rules of the Tamil Districts' Medical Federation was postponed to the next meeting.

Dr. T. K. Nilkanta Ayyar, and Dr. Miss. A. Lazarus read very interesting notes of the cases which were operated on by Lieut.-Col. T. S. Shastry, I.M.S.—*e.g.* Mastoid abscess, Head Injury, Fracture of Middle Fossa, Decompression Operation.

Dr. K. R. Venkoba Rao, L.M. & S., B.Sc., demonstrated to the members the full apparatus for testing Blood-sugar made by Carl Zeiss. Dr. N. Isaac, read an interesting paper on 'Tobacco and its medical aspects'

Dr. P. R. Venkatara Ayyar, M.B. & C.M., District Medical Officer, Nellore, paid a visit to the meeting. He was welcomed heartily by the President and warmly introduced to the Association as President of the Nellore District Medical Association and as a Tinnevellian. The Guest replied very cordially commending very highly the career and work of The Tinnevelly District Medical Association.

Thereafter Lieut.-Col. T. S. Shastry, I.M.S., summed up the salient and important features of all the cases and addresses. He also stressed the need for every doctor to keep notes of his cases as this clinical record will stand him in good stead in future and serve as the storehouse which he could place at the disposal of the District Medical Association for the advancement of professional knowledge. future and as the storehouse which he could place at the disposal of the District Medical Association for the advancement of Professional Knowledge.

An excellent dinner brought the happy gathering to a close at 11 p.m.

MEDICAL ASSOCIATIONS, SOCIETIES, ETC.

Medical Associations, Societies, Unions, etc., are invited to make use of this section of the Journal.—EDITOR

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION

The one hundred and forty-third session of the General Medical Council was opened on May 26th, with Sir Norman Walker, President, in the chair. The following items among others were dwelt upon by the President in his address:

The Indian Universities

I have an important announcement to make concerning the application of the Medical Council of India for the recognition of the degrees of certain Indian Universities. I have for the last fifteen years taken an active interest in medical education in India. Under part II of the Medical Act of 1886 the duty of ascertaining the sufficiency of the examinations leading up to the qualifying examinations was entrusted to this Council, who by resolution on May 18th, 1887, delegated it to the Executive Committee. Part II of the Act was applied to India as a whole in 1892, and prior to 1920 the Executive Committee had accepted for registration the degrees and diplomas of the Universities of Bombay, Calcutta, Lucknow (Allahabad), Madras, and the Punjab.

In 1921 Sir Donald MacAlister presented to the Executive Committee two memoranda on Indian Universities and the teaching of midwifery, and a questionary on the subject was addressed to the five universities whose qualifications were then recognized. The replies showed that the teaching of that subject was not, save in Madras, of a standard which would be recognized for graduates and diplomates of licensing bodies in this country, and with the object of finding a solution of an admittedly difficult question in India I accepted, with the approval of the Council, an invitation from the Secretary of State for India to proceed to India and to discuss the difficulties with the authorities there. In my report to the Secretary of State (Minutes, 1922, 155), I gave it as my opinion that it was possible for each of the universities to arrange in one way or another that its regulations could be brought sufficiently into accordance with the resolution and recommendations of the Council relating to the Curriculum and to examinations in the United Kingdom to enable the Council to continue to recognize its diplomas as furnishing a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of medicine, surgery, and midwifery.

I suggested that the Government of India should be advised to approach the General Medical Council with the proposal that the service of Colonel R. A. Needham, Deputy Director-General of the Indian Medical Service, who accompanied me throughout my tour, should be accepted as those of inspector. I made certain recommendations to the Council (Minutes, 1922, 168—9) which were accepted on May 22nd, 1922. On November 25th, 1922, the India Office agreed to the appointment of Colonel Needham, and for four or five years his careful and conscientious reports were the basis of the Council's continued recognition of the degrees. Colonel Needham's report, 1926-27 (Minutes, 1927, 327), gives a clear explanation of the position as it then stood.

In the summer of 1926 I received a communication from the then Secretary of State for India (Lord Birkenhead) asking if I would be willing to go to India again and report on the progress that had been made, not only in the teaching of midwifery, but in regard to the subjects of medicine and surgery also. I accepted the invitation and my report to the Secretary of State appears on page 391 of the Minutes of 1927.

On this occasion, when I was again accompanied by Colonel Needhim, I was able to visit three centres—Madras, Patna and Vizagapatam (Andhra)—to which I was not able to proceed on my first visit. In those centres which I had formerly visited I found progress had been made and not least in the department of obstetrics. Bombay has in the Ness Wadia Maternity Hospital

the best maternity hospital I have seen anywhere; it now deals with a larger number of cases than the Rotunda, and I found evidence of general improvement almost everywhere.

The Medical Council of India

I am not going to dwell on the troubled years. What Sir Donald MacAlister always maintained was that the chief difficulty in Medical teaching and lecensing in India was the absence of any co-ordinating authority to guarantee the standard of efficiency required for admission to the Medical Register. As a result the curious and paradoxical position had been reached that the only co-ordinating authority was this council. This is past history. An act to constitute a Medical Council of India become law on September 23rd, 1933. The constitution of the Council is on lines similar to ours. There are Government representatives, university representatives, and direct representatives. In my address at the opening of the November Session of 1933 I said: "this Council would welcome the establishment of such an All-India Medical Council, which by inspection and visitation and the publication in its minutes of the reports of the inspectors, as is done in this country, would supply the Executive Committee with the information which is necessary to enable them to discharge the duty laid on the Council by Part II of the Medical Act of 1886."

I said further that I had the support of the Executive Committee in proferring to the Medical Council of India an assurance of our friendly co-operation. Under Section 9 (2) of the Act establishing the Indian Council, the secretary of the Council during its first four years was to be a person appointed by the Governor-General in Council, and the Council was fortunate in securing as its first secretary Mr. Farquhar Macrae, who took with him to India all the knowledge and experience he had gained in the many services he had done for us.

Now for the future; there are eight universities under the jurisdiction of the Medical Council of India which confer degrees—Andhra, Bombay, Calcutta, Lucknow, Madras, Patna, Punjab, and Rangoon. The reports of medical inspectors to the Indian Council on Bombay, Lucknow and Patna were received just before the meeting of the Executive Committee in February, and that on Madras in March. These have been carefully considered by the Executive Committee, and they resolved yesterday that the degrees of M.B., B.S. granted by the Universities of Bombay, Lucknow, and Madras (together with other qualifications granted by the Universities of Bombay and Madras which were previously registrable) should again be recognized for registration if granted on or after February, 25th, 1930; and that the degrees of M.B., B.S. granted by the University of Patna should be recognized for registration if granted on or after May 11th, 1935, the date on which the university was included in the First Schedule to the Indian Medical Council Act, 1933, by the Governor-General in Council after consultation with the Medical Council of India. (Supplement to the *B. M. J.* May 30, 1936: pp. 295—297).

* * * *

It will not be out of place to give an account of the British Council's recognition of Indian Medical Degrees as reported in the *Statesman* early in June last.—*Editor.*

INDIAN MEDICAL DEGREES

Claims of Calcutta and Punjab Universities

The announcement regarding the recognition by the General Medical Council of Great Britain of the medical degrees of the Universities of Bombay, Lucknow, Madras and Patna has been received with mixed feelings in Indian medical circles in Calcutta.

While this gesture is regarded as a change of heart on the part of the General Medical Council, it is generally felt that the Indian Medical Council should have taken steps to get the degrees of Universities like Calcutta and the Punjab also recognized at the same time.

It is understood that the cases of the Universities of Calcutta, the Punjab, Delhi, Rangoon and Andhra are pending consideration by the Indian Medical Council.

Dr. K. S. Ray, Secretary of Indian Medical Association, interviewed by a representative of the *Statesman*, said: "From the meagre information which has been released for publication one cannot say definitely whether the action of the British General Medical Council in granting recognition to the medical degrees of certain Indian Universities will meet with unqualified approval. In the first place, many will probably look upon this recogni-

tion as somewhat belated and others may find ground for complaint in the fact that while the degrees of certain universities have been recognised those of others, particularly of Calcutta and the Punjab, have been excluded, although this latter point is not a fault that can be put down to the G. M. C.

"If it is a fault, it is that of the Indian Medical Council who were unable to carry out an inspection of all the Universities in time. This inspection may not be regarded as essential for forwarding their names along with those that have been inspected, as these universities are already on the schedule of the Indian Medical Council Act and consequently should be regarded as recognised by the I. M. C.

History of Controversy

"The statement that appeared in the press calls for a brief recapitulation of the circumstances in which the controversy started owing to the withdrawal of recognition of Indian Medical degrees by the British G. M. C. in 1930. As a matter of fact, the Indian universities enjoyed the right of having their medical degrees registered by the G. M. C. since 1892. It carried with it the right of practising medicine in Great Britain and Ireland and certain other parts of the British Empire. It was only in 1922 that the efficiency of the standard of training in the Indian universities was questioned, and insufficiency of practical experience in Midwifery was made the excuse for a warning that recognition would be discontinued unless certain minimum requirements of the G. M. C. were met. The result was that as a temporary measure, Col. Needham was appointed as a Commissioner of Medical Qualifications and Standards and he acted in that capacity from 1922 to 1927.

"Thereafter the G. M. C. insisted upon the Government of India appointing Col. Needham as Inspector until a proper machinery for inspection was established. A controversy followed and with the throwing out of the salary for this appointment by the Assembly in 1930, the G. M. C. withdrew the recognition which existed since 1892. Subsequently came the Indian Medical Council Bill which apart from providing for uniformity of a higher standard in India, provided machinery for reciprocal arrangements in the recognition of medical degrees in one country, by the other.

Gesture Appreciated

"It will be urged by some that if much younger universities have been found fit to have their degrees recognised, those of far older standing, and on the first schedule of the Indian Medical Council Act surely merit the privilege of recognition at the same time and that mere technicalities should not have stood in the way of the I.M.C. taking steps in this behalf. On the other hand, the retrospective effect of the recognition now granted to certain universities is generally regarded with appreciation. It is hoped that the G. M. C. will take note of the feeling in this regard and bring finally to a close the sorry and protracted controversy between the two countries.—*The Statesman.*

ALL-INDIA MEDICAL LICENTIATES ASSOCIATION

During the Dr. P. S. Ramachandra Iyer's Memorial Month (July 1st to 31st, 1936), Licentiates' will be enrolled as members of the Association, on payment of Rs. 4/- only without any entrance fees. Membership will entitle them to get the Indian Medical Journal (the monthly organ of the Association) free for one year. The amount of the subscription may be sent to Dr. A. N. Khosla, Treasurer, A. I. M. L. Association, Ripon Hospital, Simla.

THE RAMNAD DISTRICT MEDICAL ASSOCIATION

Formerly Chettinad Medical Association.

A monthly meeting of the above Association was held on Tuesday, 24th May, at the High School Ramnad under the presidency of Dr. B. V. Varadachari, B.A., M.B., C.M., District Medical Officer, Ramnad. 40 doctors including lady doctors were present.

After tea the Secretary Dr. T. S. Shetty of Kanadukathan read the minutes of the anniversary held at Karaikudy on April 9th and the same was adopted. Very interesting cases from the Head Quarters Hospital were demonstrated by the D. M. O. and on each there were discussions regarding diagnosis and treatment. Two of the cases Pericarditis and a Scrotal tumour elicited a good deal of discussion.

Dr. T. S. Shetty of Kanadukathan showed the bits of thyroid cartilage he had removed after preliminary tracheotomy from a case of accident with

injury and rupture of the cartilage with subcutaneous emphysema and severe dyspnoea due to blocking of air passages. He also showed another specimen of half a dozen maggots removed from the middle ear in a case of chronic middle ear suppuration.

After this there was a treat of music by two accomplished members of the association. The District Medical Officer in his concluding remarks stressed how important it was to have such gatherings and to discuss in such healthy spirit the case reports as on that day. He wanted all service people to attend meetings regularly as it was the desire of the Surgeon General as well.

U. P. MEDICAL COUNCIL

Minutes of the meeting of the United Provinces Medical Council held at Lucknow on 30th March, 1936.

PRESENT:

President.—COL. H. C. BUCKLEY, M.D., F.R.C.S.E., I.M.S.

Members.—LT.-COL. R. S. TOWNSEND, M.C., M.D., I.M.S., LT.-COL. H. STOTT, O.B.E., M.D., F.R.C.P., D.P.H., I.M.S., LT.-COL. J. C. BHARUCHA, M.R.C.S., D.P.H., I.M.S., RAI BAHADUR DR. K. L. CHAUDHRI, O.B.E., M.B., D.P.H., RAI BAHADUR DR. B. N. VYAS, M.B., RAI BAHADUR DR. R. N. BHATIA, M.B., F.R.C.S.E., CAPTAIN K. P. BAGCHI, M.B., B.S., I.M.S. (RETD.), CAPTAIN C. K. C. MISRA, M.B., B.S., CAPTAIN RABINDRA NATH CAUL, M.B., CH.B., DR. TAPESHWARNATH CAUL, M.B., CH.B., RAI SAHEB DR. RAM NARAIN LALL, L.M.P., DR. SHIV LAL SHARMA, L.M.P., DR. KUNJ BEHARI LAL VARMA, L.M.P.

Registrar Secretary.—DR. R. N. SHUKLA, M.B., B.S.

1. The minutes of the last meeting were confirmed subject to certain corrections made.

2. *Read*, Medical Council notification No. 1009/Mem.(c), dated the 3rd December, 1935, notifying re-election, by the Executive Council of the Lucknow University, of Lieut.-Colonel H. Stott, O.B.E., M.D., F.R.C.P., D.P.H., I.M.S,, Dean, Faculty of Medicine, as a member of the United Provinces Medical Council from 22nd December, 1935.

Recorded.

3. "*Resolved* that with reference to the draft rules published in the *United Provinces Gazette*, dated the 17th September, 1935, regarding the appointment of honorary surgeons and physicians, this Council recommends to the Government that length of private practice, status in the profession and experience of the subject should be amongst the guiding factors in the matter of making such appointments, and that foreign qualifications should not be given preference over Indian qualifications, simply by virtue of their being foreign."

4. The following resolution was proposed by Captain K. P. Bagchi:

"*Resolved* that this Council recommends to the Government that in clause 8 of section 3 of the Lunacy Act, IV of 1912, the definition of a 'Medical Practitioner' as 'a holder of a qualification to practise medicine and surgery, which can be registered in the United Kingdom,' the words 'in the United Kingdom' be deleted and replaced by the words 'by a Medical Council of any province in India,' and in clause 1 of section 5 of the same Act, the words 'one of which shall be from a Medical Officer,' be deleted and replaced by the words 'from two registered medical practitioners'."

Resolved that the Council accepts the principles of resolution No. 4 but as there are many other factors involved, the President may be asked to put draft rules on the subject before the next meeting of this Council.

5. Government Orders Nos. 2945, dated the 4th January, 1936, and 88/V—570, dated the 8th February, 1936, and President's note recommending that Provident Fund benefits be given to the Registrar, were considered.

Resolved that the President's recommendations be endorsed and provident fund be sanctioned for the Registrar. They also asked the Registrar to submit a scheme for establishing provident fund for the clerks at the next meeting.

6. Letter No. 51-65, dated the 17th January, 1936, from the Registrar, Bihar and Orissa Medical Council of Registration, and the report of their Sub-Committee, laying down a minimum standard of qualification for purposes of registration was read with a view to express opinion thereon for communication to that Council.

Read to await report of the Sub-Committee of the State Medical Faculty.

7. Letter No. 83, dated the 25th November, 1935, from the Chairman, King George Thanksgiving (Anti-Tuberculosis) Fund asking this Council's opinion whether the local anti-Tuberculosis bodies should be independent bodies or be affiliated to the Red Cross Society, was considered.

Resolved that this Council recommends alternative 5(c) with the provision that this does not involve dependence on the Red Cross Society in matters of administrative control, collection, allocation and distribution of its funds.

8. *Read* the report of the Standing Committee, which met on 13th March, 1936, to approve their recommendations.

Resolved that the report of the Standing Committee be approved and their recommendations accepted.

9. With reference to resolution No. 30 of November, 1935, the report, dated the 13th March, 1936, of the Sub-Committee appointed to suggest amendments to Medical Act and the Code of Medical Ethics, was considered.

Resolved that the report be referred back to the Sub-Committee for further elaboration and that Rai Bahadur Dr. K. L. Chaudhri, O.B.E., be added to the personnel of the committee.

10. With reference to resolution no. 28 of November, 1935, G. O. No. 2948/V—569, dated the 20th February, 1936, to the President, Medical Council, informing that the demand for provision of funds for two members of the Medical Council to visit examinations at Agra Medical School was received too late to be included in the budget for 1936-37, was read.

Resolved that the Government be requested to provide this money in the supplementary budget.

11. With reference to resolution No. 26 of November, 1935, letter No. 2195, dated the 16th January, 1936, from the Director, Medical and Public Health Department, His Exalted Highness the Nizam's Dominions, Hyderabad, Deccan, and the question whether the degrees and diplomas of the Osmania Medical College should be added now to the schedule as registrable qualifications, were considered.

Resolved that the syllabus and courses of studies should first be gone into by the Standing Committee.

12. With reference to resolution No. 25 of November, 1935, Registrar, Andhra University's letter No. 92-C.36, dated the 23rd January, 1936, with the curriculum of M.B., B.S. examination of that University, and the question whether the said qualification should be recognized as a registrable qualification and added to the schedule, were considered.

Resolved that the syllabus and courses of studies be referred to the Standing Committee for their opinion.

13. *Resolved that,—*

"With reference to G. O. No. 83/V—343, dated the 27th January, 1936, the matter be referred to the Standing Committee for report as to the desirability of rescinding the amendments to the rules regulating subsequent elections notified in Government notification No. 2285/V—343, dated the 21st September, 1935, because irregularities are reported by Dr. Varma to have occurred under the amended rules.

14. *Resolved* that T. D. D. (Wales) and D. M. R. and E. (Cantab) qualifications be accepted as additional qualifications.

15. Letter No. F.-32—36/141, dated the 3rd March, 1936, from the Secretary, Medical Council of India, New Delhi, asking for the opinion of this Council whether Indian Nationals possessing medical degrees of repute in foreign countries with which India has no reciprocity should be granted recognition in India and, if so, what basis should they be recognized in India, and inquiring what is the present practice in both these respects in this Council, was considered.

Resolved that the matter be referred to the Standing Committee.

16. *Resolved* that the present rate of travelling allowance and halting allowance plus Rs. 32 be paid to all members for attending the Medical Council, Sub-Committee and Standing Committee meetings.

Resolved further that when forwarding this letter to Government practices of other provinces may be referred to—these to be furnished by Rai Saheb Dr. Ram Narain Lall.

17. [Withdrawn.]

18. [Withdrawn.]

19. [Withdrawn.]

R. N. SHUKLA,
M.B., B.S.,
Registrar.

H. C. BUCKLEY,
COLONEL, I.M.S.,
President.

BOOK REVIEWS

Medical Annual, 1936 — Edited by H. Letheby Tidy and A. Rendle Short, Demy Octavo 620 pages with 156 text illustrations and 81 plates. Price 20 Shillings (Subscribers 17 Shillings).

The Medical Annual, 1936 records another year's progress in the medical world. No outstanding discovery in the realm of etiology of diseases, or, of therapeutics has been made during the year under review. Accumulated knowledge in various surgical procedures has brought out improved technique and superior methods. Thus in gastric ulcer partial gastrectomy, and in duodenal ulcer excision of the ulcer with pyloroplasty are advocated as yielding better final results than the age-long gastro-jejunostomy where the subsequent development of jenunal ulcers (or anastomic ulcers) is a serious source of trouble. Surgical treatment of bronchiectasis by lobectomy claims more permanent cure and much reduced mortality—even pneumectomy is attended with success. Surgery of the sympathetic nervous system is carried on more often, and the work of Crile in denervating adrenalin in the treatment of hypertension, hyperthyroidism, peptic ulcer, and possibly diabetes is interesting and highly speculative. Adrenalectomy in obliterative arteritis is claimed by Oppel of Leningrad to produce good results. The removal of gallbladder in certain heart conditions, and partial thyroidectomy in congestive heart failure are further triumphs of surgery, in purely medical cases. Manipulative surgery, and mental diseases especially in relation to gynecology have been discussed at length. The chapter School Medical Service provides useful information. A new method, cysto-diaphanoscopy, as an aid to gynecological diagnosis is discussed. In Medicine, the use of mandelic acid in coli infections, of vasodilators in tobacco amblyopia, of histidine preparations parenterally in gastro-duodenal ulcer are useful additions to the already existing methods. On the whole the various branches of medicine, surgery, and gynecology and obstetrics have been well-covered; and the successful practitioner and the scientific student of medicine will both benefit by a careful perusal of this very useful and indispensable year book on medicine.

P. K. GHOSH.

'Racial' Problems —

Reuter, E. B. (Editor). Race and Culture Contacts. London, 1934. McGraw-Hill Publishing Co. Pp. VIII+253. Price 18s.

Cunard, Nancy (Editor). Negro. London, 1934. Wishart & Co. Pp. VIII+855. Profusely illustrated. Price 42s.

Weatherford, W. D. and Johnson, C.S. Race Relations. London, 1935. D. C. Heath & Co. Pp. X+590. Price 15s.

Those who have read the outstanding discussion* of 'racial' problems by Professors Huxley and Haddon will want to read these books. They extend the 'debunking' of theories of racial purity and inequality, and the supposedly biological arguments against miscegenation.

Fourteen prominent sociologists, including the editor himself, contribute to Dr. Reuter's symposium. They cover, with a remarkable freedom from rationalisation, the cultural and economic aspects of ethnic contacts and fusion. Miss Cunard's magnificent anthology is the expression of 'some 150 voices of both races—for the recording of the struggles and achievements, the persecutions and the revolts against them, of the Negro peoples'. And they relate their records to an uncompromisingly rational background, which makes the complete survey the most vital of its kind.

Professors Weatherford and Johnson provide a systematic treatment of the issues involved in ethnic relations in general and Negro-white contacts in particular. Theirs is the first sociological textbook to be written by 'a white man and a Negro as joint authors', and they regard it as 'a concrete expression of racial co-operation and, they believe, of racial goodwill and understanding'. Unlike the more radical authors of *Negro*, they write with a careful

* We Europeans. A Survey of Racial Problems. Cape 1935.

regard for the susceptibilities of American and other brands of liberalism, the white author doing, as Professor F. H. Hankins has observed, 'most of the moralising and special pleading', while the black, who is 'distinctly more fully oriented in sociological literature', confines himself to strictly objective statement. For these reasons their work may appeal more than Miss Cunard's to the many who still prefer a spade to be called a gardening implement. But both books furnish a revelation of past culture and present potentiality, and an indictment of the ferocity of European exploitation, which will astonish the more educable Babbitts who believe in the innate inferiority of the 'black races' and impress even the converted.

With *We Europeans* and Professor Toynbee's *Study of History*, the three volumes noted here should find an honoured place in the library of every serious student of human affairs. They are contributions to true eugenic policy which provide an instructive and refreshing contrast to the ineptitude characteristic of the work of Messrs. Lothrop Stoddard and Madison Grant—and their Nordiculous admirers. For us Indians they are particularly important.

CEDRIC DOVER.

Introduction to Human Parasitology by Asa C. Chandler, M.S., P.H.S., 5th edition, revised and enlarged.

John Wiley & Sons Inc., New York, 1936. xvi + 661 pages, with illustrations.

In the fifth edition of the book "Introduction to Human Parasitology" by Asa C. Chandler, we find a fulfilment of a great felt want of our knowledge in modern development in the branch of human parasitology. The book contains twenty-eight chapters and supplies information starting right from the spirochaetes to fly maggots and myiasis. In the chapter on intestinal flagellates the name of the genus Embadomonas should have been changed for Retortamonas according to the new nomenclature of Wenrich. Microorganisms of doubtful nature which cause disease amongst human beings have also been dealt in a satisfactory manner. Above all, a few pages on filtrable viruses have rendered the book more valuable than others now available in the market. Remedies and prevention against certain parasites have been aptly supplied at the end of some chapters. Illustrations other than original ones are taken from various authorities which have been duly acknowledged although we feel that there is still room for improving the diagrams. There is an exhaustive and useful list of references at the end of the book which affords an opportunity to those who intend to persue their studies beyond the scope of this book.

T. N. PODDER.

Pharmacopoeia and Guide, published by the the School of Tropical Medicine, Calcutta, 1936. xi + 153 pages. Price Rs. 2/8/-.

The first third of the book contains usual prescriptions found in hospital pharmacopoeias and deals with posological tables of pharmacopoeial drugs and tables of weights and measures. The middle third contains summaries of diagnosis and treatment of all tropical diseases that are met with in India and is of great practical value. The last part deals with different laboratory tests, contains tables of normals and a long list of ordinary articles of diet and common Indian fruits and vegetables with their respective food values making this portion highly useful to the general practitioner. The book is handy, finely printed and nicely bound but it is certainly too costly to be universally used by the general practitioner.

P. C. GHOSH.

APPENDIX

MEDICAL CURRICULUM

I. Report of the Medical Curriculum Conference, Great Britain

The Board of the Faculty of Medicine of the University of London, during the session 1931-2, had under consideration a number of requests from various sources for modifications in the medical curriculum, and, in view of these requests, the then Dean of the Faculty, Professor G. E. Gask, asked the Board to consider whether the different parts of the curriculum should be dealt with separately, or whether the time was ripe for a review of the whole curriculum. A committee was appointed to consider the question, and the view of this committee was that there was sufficient cause for dissatisfaction to justify a review of the whole curriculum. The Board had also been aware, unofficially, that a syndicate had been reviewing medical studies at the University of Cambridge, and that dissatisfaction with the medical curriculum was felt in various quarters.

The Senate of the University of London, at its meeting on June 22nd, 1932, passed the following resolution:

That the Universities of Oxford and Cambridge and the Royal College of Surgeons of England be invited to appoint representatives to confer with the University of London to consider the defects of the medical curriculum and to make suggestions for reform, and that the Board of the Faculty of Medicine be asked to nominate not more than four representatives to attend the conference.

These invitations were accepted, and representatives were appointed to the Medical Curriculum Conference as follows:

University of Oxford: Sir Farquhar Buzzard, Bt., D.M., F.R.C.P., Regius Professor of Medicine; M. H. MacKeith, D.M.; W. H. Ogilvie, D.M., M.Ch., F.R.C.S.

University of Cambridge: Sir Walter Langdon-Brown, M.D., F.R.C.P., Regius Professor of Physics; Professor H. R. Dean, M.D., F.R.C.P.; A. E. Clark-Kennedy, M.D., F.R.C.P.

University of London: A. M. H. Gray, M.D., F.R.C.P., F.R.C.S., Dean of the Faculty of Medicine; Professor C. A. Lovatt Evans, D.Sc., F.R.C.P., F.R.S.; Professor G. E. Gask, F.R.C.S.; Professor Winifred Cullis, D.Sc.

Royal College of Physicians of London: The Right Hon. Lord Dawson of Penn, M.D., President; Sir Raymond Crawford, M.D., F.R.C.P.; Sir Ewen Maclean, M.D., F.R.C.P.

Royal College of Surgeons of England: Sir Holbart Waring, BT., M.S., President; Eric Pearce Gould, M.D., M.Ch., F.R.C.S.; Professor William Wright, D.Sc., F.R.C.S.

The Conference elected Lord Dawson as its chairman, and appointed Mr. G. W. Rossetti to act as secretary. It invited the Society of Apothecaries of London to appoint a representative, and Mr. T. Bramley Layton, M.S., F.R.C.S., having been chosen, became a member of the Conference. In view of the special consideration to be given to the preventive aspects of medicine, Professor W. W. Jameson, M.D., F.R.C.P., was invited to join in the deliberations. An executive committee, constituted as follows, was set up to consider the medical curriculum, to take evidence, oral and written, to confer with other bodies, and to report from time to time; Sir Farquhar Buzzard (chairman), Professor Gask (vice-chairman), Dr. Clark-Kennedy, Professors Dean and Lovatt Evans, Mr. Pearce Gould, Drs. Gray and MacKeith, Sir Ewen Maclean, and Professor Wright. The executive committee held twenty-eight meetings, at which it consulted with various medical teachers and representative school-masters, and received memoranda, letters, and reports from a large number of bodies and persons interested in various aspects of medical education.

The Conference has now issued its report, which is signed by all the eighteen members and dated April 30th 1935. The main body of the report opens with the following remarks on the medical curriculum, its purpose and functions, and the criticisms which have been levelled at it of late.

GENERAL CONSIDERATIONS

"The medical curriculum, as generally followed in the medical schools with which this Conference is concerned, has been subject to attacks from many quarters, but enthusiasm for reform may be tempered by the knowledge that, in spite of its imperfections, it is capable of producing a large number of well-trained and efficient practitioners of medicine. Gibbon has said that 'the power of instruction is seldom of much efficiency, except in those happy dispositions where it is almost superfluous,' and probably the preponderance of efficient practitioners is determined as much by their inherent qualities as by their training. There can be little doubt that in any curriculum the more intelligent student must be less handicapped by its faults than is his less gifted brother or sister. But the curriculum should be designed to give the student of average ability such knowledge and such education as will enable him to approach the problems of practice with some degree of confidence, and with a legitimate hope that his scientific outlook on health and disease will enable him to learn from subsequent observation and experience. In the long run a scientific outlook, if once acquired, will prove of more lasting value than a store of knowledge.

"It is a frequent, and probably just, criticism of the curriculum that so large a store of memorized facts is required of the student that he has little opportunity to develop the habit of critical inquiry and judgment which his scientific training is designed to encourage. It is, however, impossible to inculcate general scientific principles without the introduction of much concrete knowledge. Another criticism of the medical curriculum is concerned

with the multiplicity of special courses of instruction, followed by examinations, which tend to divide a prolonged period of study into a number of more or less watertight compartments, with the result that the student is tempted to regard them as independent obstacles in his progress towards the goal of qualification. This very real defect can be overcome by reducing the number of examinations and by making the transition from one course of instruction to the next as little abrupt as possible.

"Of recent years, too, there has been an increasing demand that emphasis should be laid upon the preventive aspects of medicine, and on the principles of personal and communal hygiene which govern the maintenance of health and the avoidance of disease. This demand is justified, but such principles, important as they are, cannot be regarded as a separate study. They belong to physiology, to biochemistry, to pathology, and to every branch of clinical medicine and surgery, and the teachers in all these subjects have a special duty to perform in stressing the part which a doctor can play in the prevention as well as the cure of ill-health.

"The Conference is satisfied that the relative amount of time and attention devoted by students and teachers to some parts of the curriculum is to an extent determined by the importance attached to them in the examinations, and that some desirable changes can be most effectively secured by examining boards.

"The Conference recognizes that the ideal approach to clinical study is by a university training leading to a degree in arts or science. At the University of Oxford almost all medical students take the courses leading up to the Honours School of Natural Science, and devote three or four years to preparation for this examination. At Cambridge medical students have always been encouraged to take the Natural Sciences Tripos, and under the new regulations, which have just come into force at that university, all students will be required to attain the standard of an honours degree before they are allowed to proceed to the final M.B., examinations. At both Oxford and Cambridge the required period of residence for a degree is three years, and a certain proportion of students remain in residence for four years. At both universities three years of clinical study are required, so that the interval between matriculation and the final examinations can never be less than six years and on an average may well be more than seven years. At the University of London some medical students work for a B.Sc. degree, with the result that there is an inevitable postponement of their date of qualification.

"The advantages of working for a degree in arts or science, in addition to the necessary period of study for a medical qualification, are obvious. The medical student comes into contact with men working at other subjects and preparing for other profession, and listens to lectures by teachers whose concern and interest in life are the development of their own branch of knowledge. Moreover, it is good for the medical student to work in the laboratories with men who are destined for careers in science other than medicine and who are interested in science from many and different points of view. There can be few, if any, branches of science which have not been advanced by the labours of medical men. The Conference recognizes the great advantages enjoyed by those students who are able to devote once or more additional years to the study of the natural sciences as a prelude to and in preparation for their professional training. It recognizes that such men, coming as they do from courses of study and research which have not been devised exclusively for medical students, bring with them new ideas and a fresh outlook, which is of great advantage to the development and progress of the science and practice of medicine. Nevertheless, all men cannot afford the additional time and money which a university education in science or arts demands, and the Conference has thought it impossible to recommend any alterations in the curriculum which would prolong the present minimum period of five years for a medical qualification."

The Conference hopes that in the recommendations it makes due weight is given to the various subjects which must be embraced in any course of medical training, and that their adoption would make the curriculum a continuous period of study as little broken up by examination as possible, affording the student time and opportunity for self-education in spite of the efforts he is called upon to make in memorization. It believes that in this way his memory may prove equal to the burden imposed on it, and that, by developing at all points fields of association, his mind may acquire that kind of culture which survives the forgetting of facts.

PRE-MEDICAL STUDIES

Remarking that the general education of an intending medical student is of the greatest to those engaged in trying to frame a medical curriculum, the Conference notes that the period of pre-medical studies is spent with increasing frequency at school and only too often general education is stopped at too early an age, in order to specialize in elementary science for the purpose of passing the pre-medical examination. The Conference was assured that general education need not be neglected during the preparation for first M.B. and other preliminary science examinations.

"It is, however, probably true that preparation for these examinations takes up very nearly the whole time and energy of intending medical students during their last two years at school. That a boy who has reached the matriculation standard of a university should spend his last two years at school almost wholly in the study of the natural sciences may not be undesirable, although the Conference feels it important that the study of literature and languages should be continued up to the time of leaving school. It is, however, a serious matter if intending medical students during their last two years are segregated in a small group not only from the rest of the school, but even from other boys on the science side."

In view of the difficulties experienced by schools in teaching candidates for the requirements of the different syllabuses of the several examinations for first M.B. or basic sciences, the Conference recommends that the syllabuses in chemistry, physics, and biology for the examinations of the different licensing bodies should be brought more into line

with one another. Syllabuses designed with this object appear in an Appendix. The Conference further recommends that to ensure, during the period after passing matriculation, the continuance at schools of the general education of intending medical students, the licensing bodies should consider the possibility of allowing and encouraging exemption from the first M.B. by means of a higher schools certificate examination, in which, besides the three principal scientific subjects, a subsidiary non-scientific subject is taken. In order to allow sufficient time for general education, and to avoid the danger of too early specialization, the Conference is generally agreed that medical studies proper—that is, anatomy and physiology—should not be taken before the age of it.

THE PRE-CLINICAL PERIOD

The Conference does not recommend any change in the present arrangement whereby the first two years of the medical curriculum should be devoted to intermediate studies, leaving three years for the clinical period. It believes, however, that certain rearrangements could be made by concerted action of the teachers so that the course would be more harmonious, consecutive and interesting. With this end in view it recommends that the work of the student during this period should be arranged by a board of teachers representing anatomy, physiology, chemistry, biochemistry, pharmacology, and pathology.

The following further recommendations are made by the Conference in regard to the pre-clinical period intermediate studies: That during the first four terms of medical studies the student continue the study of chemistry, carry out work in the dissection room and department of anatomy, and, in the second term, begin the study of the elementary physiology and biochemistry. That during the fifth and sixth terms of medical studies, while continuing the study of anatomy and physiology, the student be introduced to the principles of general pathology, immunology, and bacteriology by a pathologist. That the teaching of organic, physical, and colloidal chemistry be determined by conference between the teachers of physiology, biochemistry, and chemistry, due weight being given to the opinions of the teachers of physiology on the special needs of students of medicine. That the teacher of anatomy be given access to hospital material for teaching applied anatomy, with or without the assistance of a clinician attached to his department. That during the second year of medical studies the teacher of physiology familiarize the student with the use of the stethoscope, the ophthalmoscope, the laryngoscope, and the otoscope. That during the second year of medical studies the teaching of pharmacology, which shall include toxicology, should be arranged in close co-operation with the teachers of physiology. That during the second year of medical studies—that is, towards the end of the pre-clinical period—the student shall attend a short course of lectures in elementary medical psychology.

The Conference devoted earnest attention to the large proportion of the student's time which is spent in the dissecting room, and considered a suggestion that it is unnecessary for every student to dissect the whole body. On this important question the Conference was not unanimous. On the other hand the Conference takes the view that, while dissection is valuable as a training in technique and a discipline, it can with advantage be supplemented by the use of models, by radiography, and by other methods. It is also believed that the teacher of anatomy could save the student's time if he had the opportunity of demonstrating the anatomy of the abdomen and thorax in the post-mortem room. The Conference also holds that in the past too much time has been spent and too great a stress has been laid on the memorization of structural detail for examination purposes.

The Conference therefore recommends that the student's acquaintance with the details of each part immediately after its dissection should be established orally by his teachers before he is allowed to proceed to the next, but the detention in his memory of all such minutiae should not be made the criterion of his fitness to pass on to hospital work. "If this plan is adopted the pre-clinical examination in this subject, closely associated as it should be with that in physiology, would be a test not so much of memory but of the student's grasp of the constitution of the human body as a whole and of the structure and function of the essential systems."

PRE-CLINICAL EXAMINATION

The Conference believes that the examination at the end of the second year of the curriculum should be designed to test the student's general knowledge of the structures and functions of the human body, together with an elementary acquaintance with the principles underlying simple reactions of its tissues to physical and chemical changes in their environment.

The Conference has been impressed by the high percentage of failures in examinations in anatomy and physiology, and believes that the number of failures could and should be reduced, not by lowering the standard, but by altering the methods of teaching and examination. It accordingly recommends that the student's knowledge of detail of a subject should be tested orally by his teachers before passing to a new part of the work, and that success in the pre-clinical examination should not depend on a mere feat of memory, but rather on such grasp of the structures and function of the body as is necessary to equip the student for hospital work. Since one of its recommendations is that instruction in elementary general pathology should be included in the pre-clinical period it follows that the student's knowledge of the subject should be tested in the pre-clinical examination.

The Conference is of opinion that the Board of Examiners should represent anatomy, physiology, pathology, and pharmacology, and that all the examiners should meet and co-operate in setting their questions, so that papers may be reasonably balanced and not too specialized in their requirements. It recommends that there be no separate examination in pharmacology or in organic chemistry. It holds that the student's knowledge of the physiological and therapeutical aspects of pharmacology (including toxicology) should be tested at the final examination.

THE CLINICAL PERIOD.

"The clinical period of the curriculum has not escaped censure. Too much of the student's time it is alleged, is taken up, particularly in the wards, with the study of rare and complicated diseases which he is unlikely to meet with when he goes into practice. Too much of his time is wasted in watching major operations which he will never perform. Opportunities for acquiring an intimate knowledge of the diagnosis and treatment of minor ailments are insufficient, and when the final examinations are reached such knowledge as he has is rarely put to a searching test. If the neuroses and psychoneuroses, which take up such a large amount of time and energy in a doctor's practice, are included among minor ailments, this charge attains serious proportions.

"There is truth in these criticisms, and it is hoped that the recommendations made below will do much to meet them. It should be remembered, however, that the student's attention to the history of patients and their diseases, however rare, his daily observations of their symptoms and physical signs, and the gradual elucidation of the difficult problems of diagnosis which they present, are all essential to medical education, and the lessons so learned by the student remain as a permanent part of his professional equipment. The supreme value of periods of clerking and dressing in the general wards during which students are brought into intimate contact with patients remains unchallenged. It is this intimate association of small bodies of students, clinicians, and patients which has brought British Medicine to its present standard, and it should not be disturbed. It must be recognized, however, that medicine is becoming, and should become, more scientific and less empiric. The scientific standards and methods of thought, inculcated in the student in the pre-clinical years, should be carried into the wards, and applied at the bedside and in the laboratory.

"It is for this reason that it is hoped that applied physiology and anatomy will be carried through the whole of the medical course, and also that pathology, the study of the processes of disease, be taught throughout the whole of the clinical period, in close association with all the branches of medicine, and not be regarded as a special study. On the other hand, there is in all large hospitals a mass of clinical material ready to hand for the study of minor ailments, and much of this passes in and out of the casualty and out-patient departments unused. In special departments, such as those dealing with the diseases of the eye, the ear, the nose, the throat, and the skin, the student may, under proper guidance, absorb a large amount of useful information and experience if he is encouraged to do so. But he knows that there is little likelihood of his being confronted with an 'eye case' or a 'throat case' in his final examination, and is often content to run the risk of exposing his ignorance in these directions.

"This unfortunate position has been reached because teachers in charge of the special departments have hitherto been unrepresented on the boards of 'final' examiners, with the result that their valuable co-operation, both in setting questions and in providing clinical material, is not used to proper advantage. The fear that they might expect too much specialized knowledge on the part of students need not be entertained if they examine in association with general physicians and surgeons. On the other hand, their co-operation would lead to the newly qualified practitioner being more familiar with the use of instruments, such as the ophthalmoscope and the laryngoscope, and with the features of such common disorders belonging to the special departments as play so large a part in general practice.

"The task of making the student familiar with the main features of the neuroses and psychoneuroses and, perhaps still more difficult, with the individual psychological outlook of patients suffering from organic diseases, is one to which much attention has been devoted in recent years. The Conference has had the advantage of considering many authoritative memoranda on this subject, and has reviewed evidence of the methods adopted by different medical schools all over the world. The recommendations it has decided upon are the result of much time and thought given to a very subtle problem."

SPECIAL DEPARTMENTS AND EXAMINING BOARDS

"The necessary changes in the clinical period will be best brought about by changes in the form and scope of the final examinations. The arrangements at present in force in regard to the time spent in wards and out-patient departments for the purpose of studying general medicine, surgery, gynaecology, and midwifery do not call for particular change, except that more attention should be paid to: (1) the recognition and treatment of minor ailments, (2) the psychological aspects of medicine, as indicated in the Conference's recommendation dealing with that subject.

"The arrangements now in force in regard to the time and attention devoted by the student to the special departments and in particular to those concerned with diseases of the eye, ear, nose, and throat are less satisfactory. The teachers in these departments have batches of students allotted to them for two or three months and, except in so far as they are responsible for a record of attendances, have little opportunity of judging the results of their teaching, and can scarcely be satisfied with the extent and method of its testing. The student is inclined to regard this part of his work as so many attendances for which he must be signed up, and is prepared to gamble on not being confronted with a question or a case belonging to these departments in his final examination. And yet the recognition and treatment of common disorders in general practice. It can hardly be disputed, therefore, that the system of certifying attendances in special departments is an unsatisfactory criterion of adequate knowledge.

"The remedy would appear to lie in having a board of examiners for the qualifying examination which would include representatives of the special departments. Such representatives would have a say in the preparation of examination papers, and would take a part in the clinical and *viva voce* examinations. As a result it may be expected that teachers in special departments would become more keenly

interested in seeing that their students acquire a reasonable facility in the use of the instruments necessary for investigation and reasonable skill in recognizing common disorders.

"The adoption of this scheme does not, in the opinion of the Conference, do away with the necessity for certification of attendance in various special departments. These certificates are valuable from an administrative and disciplinary point of view to those in authority who are responsible for the organization of medical studies in the school. Much of the time now spent in watching major operations might be more profitably expended by the student attending the casualty department, where throughout the day new cases of all kinds are being seen and examined for the first time."

A schedule of the certificates of experience or attendance at courses of instruction that should be required of students before entry to the final examination appears as one of the appendixes to the Report.

Preventive Medicine

"The teaching of preventive medicine will only be adequate if, as has been stated above, its importance is realized by teachers throughout the whole curriculum. Whilst still in the pre-clinical period the student should learn from the professor of physiology the scientific basis on which rests our knowledge of personal hygiene. It is the duty of the teacher of pathology to stress the striking advances in preventive medicine which have followed upon bacteriological and immunological research. The clinician has innumerable opportunities for instruction in preventive medicine. As examples may be mentioned the dangers of oral and other focal sepsis and the possible harm that may result from dietetic errors and the thoughtless resort to drugs.

"Obstetricians and paediatricians have the special duty in the later stages of the curriculum of emphasizing the function of the medical practitioner in relation to preventive medicine in such matters as ante-natal work, the conservative conduct of labour, the management of the puerperium, and the care of the child during its early years of life.

" Finally, the Conference recommends a syllabus of lectures on the public health and State medicine including forensic medicine. Whilst the lectures need not be given by one teacher, the Conference is of the opinion that there would be many advantages in placing the course under the control of one person who should preferably be a member of the public health service selected for his known ability to teach. Certain of the lectures might possibly be given by an experienced national health insurance practitioner and others by someone such as a coroner skilled in medico-legal work."

"An appendix to the Report gives the outline of a syllabus in public health and State medicine (including forensic medicine).

Medical Psychology

"This subject will have been introduced during the pre-clinical period. During the clinical years there should be given not less than six demonstrations at a mental hospital, in order to make the student familiar with the general aspects of advanced insanity and with the administration of institutions devoted to the care of the insane and of the mentally defective.

"It is highly important that the student should be made familiar with the psychological aspects of patients in the hospital, whether they are under treatment for organic disease or for functional nervous disorders, or are admitted merely for the purpose of observation and investigation. With this object a series of demonstrations should be held at least once a fortnight throughout the student's period of in-patient clerking and in-patient dressing. It is recognized that there are many patients in every ward suitable for investigations and demonstrations of this kind, but that a considerable amount of time is required for their preliminary study before they can be used for the purposes of teaching. In some medical schools such demonstrations have long been in force with great success and it is submitted that the physician or surgeon in charge of the ward may undertake them himself or may hand over that duty to a colleague who is attached to the hospital for the purpose of teaching medical psychology.

"In this way the teacher of medical psychology is able to draw upon the material in the hospital as a whole for teaching purposes, and by selecting patients whose condition is not primarily one of mental disorder the psychological features of any sick man, woman, or child can be brought to the notice of the medical student in proper perspective. Much importance is also attached to the recommendation that in the final qualifying examination adequate knowledge of the psychological aspects of ill-health should be expected from the candidates, and should be thoroughly tested, not only in written papers, but in the clinical and oral parts of the examination."

Pathology

"This subject occupies a unique position in the clinical part of the curriculum inasmuch as it forms the essential background to all branches of clinical practice and yet has developed into a science of its own, employing its own methods of experiment, a highly specialized technique, and exploring avenues of research where the results obtained may have no immediate clinical application. Pathology must be taught, therefore, with two objects in mind. First to give the student such a grasp of its importance that he will come to think at the bedside instinctively in terms of pathology; and, secondly, to give the student such an interest in the science pathology that he is alert to follow its progress and ready to avail himself throughout his career of the advances in pathological theory and their application. To ensure the latter the student must attend set courses in pure pathology and spend sufficient time in laboratory work to learn something of its technique and experimental methods. To provide for the former it is essential that throughout the whole of his clinical course the student should renew his acquaintance with morbid process in their physical signs presented by the patients in the wards and out-patient department.

"Whilst naturally leaving to the professors of pathology complete freedom to use such methods as seem to them the best for providing this twofold kind of tuition, the Conference is of opinion that the student will be helped to grasp the

true importance of pathology and its bearing upon his practice if he be examined in the subject, not, as is now the case, in a separate examination which he can pass and leave behind him, but as part of a final clinical and pathological test. It is for these reasons the Conference recommends that pathology should be taught throughout the whole of the clinical period, and that pathology should be included in the final examination."

The Final Examination

"There is much to be said on theoretical grounds in favour of a final examination in pathology, medicine, surgery, and obstetrics, the whole of which must be passed by the student at one time. But the Conference realizes that experience has shown that few students are able to do themselves justice in so stern a test. The Conference is of the opinion that it is most desirable to preserve the unity of pathology, medicine, and surgery by combining these subjects in one examination, but recognizes that the subjects of obstetrics, gynaecology, and disorders of infancy may well be taken separately.

"Modern conditions of practice make the recently qualified practitioner a consultant in obstetrics, and for this reason the Conference is of opinion that there would be a real advantage if the test of a student's knowledge in this subject were made the last step in the whole curriculum. To a certain extent, especially in regard to the relation of a newly qualified doctor to public bodies, the same may be said of the subjects public health and State medicine, including forensic medicine. For this reason, and also to avoid overloading Part I, it is suggested that these subjects come under Part II of the final examination."

The Conference therefore recommends that the final examination should consist of two parts:

I. Medicine, surgery, and pathology.
II. Gynaecology, obstetrics, and paediatrics; public health and State medicine, including forensic medicine.

It is recommended that both parts of the examination may be taken at one and the same time, or alternatively, that a candidate may enter for Part I prior to entering for Part II, but no candidate should be deemed to have passed Part II of the examination until he has satisfied the examiners in Part I. Thus a candidate who enters for both parts of the examination at the same time may be referred in Part II only.

In the Conference's opinion the final examination should be conducted by a board of examiners representing the various subjects of the examination, with a chairman who shall meet and co-operate in setting questions so that the papers are resonably balanced and not too specialized in their requirements. The pass list should be prepared at a meeting of the board at which all examiners are present. The examiners in Part I might include representatives of medicine, surgery, pathology, medical psychology, dermatology, ophthalmology, oto-rhinolaryngology, orthopaedic surgery (including manipulative surgery); and in Part II, obstetrics and gynaecology, paediatrics and disorders of infancy, public health and State medicine (including forensic medicine). Lastly, the Conference recommends that more time should be allowed for the clinical and *viva voce* parts of the examination than is usually now the case.

Post-Graduate Clinical Experience

The Conference is of opinion that a medical student, after passing the final examination, should spend at least six months as a resident medical officer in an approved hospital before commencing private practice. It hopes that in the near future the number of such posts available to recently qualified men and women may be sufficient to make a statutory obligation of this kind practicable.—(*British Medical Journal*: May 18, 1935: pp. 1040—1043).

Report of Committee on Medical Education

I. GENERAL CONSIDERATIONS

1. The primary object of the medical curriculum should be to produce on its completion a practitioner who has acquired a right attitude towards professional duties and responsibilities, an ability to deal reasonably in the early days of practice with such patients and conditions as may confront him, and such basic knowledge and mental training as will enable him to profit continuously by daily experience. It should at the same time constitute such a co-ordinated course of study as will by its mental discipline make the student a really educated person and not merely a skilled technician.

2. From the beginning of the curriculum and throughout attention should be directed primarily to health, its preservation, perfection, or restoration, and not to disease. A patient could then naturally come to be regarded as a person to be restored to the normal, if possible, and taught to remain so, rather than as "an uninteresting vehicle containing some fascinating disease processes." (Bernard Hart.)

3. It is important (*a*) that the student should start the medical curriculum with adequate and appropriate previous equipment, and (*b*) that the curriculum should not be regarded as divided into separate blocks of study, but that, on the contrary, all subjects, should be to some extent interdependent. The preliminary sciences in relation to the rest of the medical course, and also human anatomy and physiology in relation to clinical study, should be continuous in their application, revision, and development.

4. There is no need to prescribe strict uniformity of method in the application of the curriculum or in the system of teaching adopted. Indeed, it is desirable to allow—even to encourage—a wide liberty of choice in the different schools, provided that certain broad general requirements are satisfied.

II.—MAIN OUTLINES AND CONTENT OF THE COURSE.

Registration and Pre-registration Studies.

5. Registration as a medical student by the General Medical Council should be compulsory, and statutory powers

should be sought to this end. No student should be allowed to begin his medical course as such until he is so registered. The time of registration should be at the point where the study of human anatomy and physiology is systematically, begun. Before registration the student should be required to show a somewhat higher degree of general education than the minimum now required, and also a sufficient knowledge of physics, of chemistry (including the main facts of organic chemistry), and of the general principles of biology.

6. The student should have taken at school the School Certificate Examination, and thereafter should have followed, either at school, or at a university, or at some place of higher education approved by the university, a further course of study which, in addition to the three science subjects, would include other subjects of general education, usually English language and literature, a foreign language, and perhaps history. Such a course would not necessarily be taken only by those students who were intended for the profession of medicine.

7. The usual duration of such a course would be two academic years. Within such a period it would be possible to ensure for the student of average ability a thorough grounding in physics, chemistry, and biology, while continuing the study of other subjects of general educational value. Representatives of the teaching profession consulted by the committee were unanimously of opinion that it would be advantageous definitely to prescribe the age of 18 years as that below which registration as a medical student should not be allowed; but they agreed that there are exceptional students who could take the required course and attain the required standard therein in less than two years, and also that it was possible, by a system of deliberate cramming, to attain success in the present type of examination in a shorter period or at a slightly lower age. This, however, it is desirable to avoid.

8. At the end of this course there should be some examination test prior to registration. Such an examination should include, as compulsory, at least one general subject in addition to the science subjects, with opportunity to take more than one such subject when the student so desires. It is undesirable to establish any new examination for this purpose and it seems likely that the Higher School Certificate Examinations of the Universities—for example, the London University, the Oxford and Cambridge Universities, and the Combined Northern Universities—may provide convenient machinery for such a test. Normally these examinations are taken by the student at 18 years of age, two years after the School Certificate Examination. There are a considerable number of groups of subjects which may be taken, and within these groups subjects may be designated as principal and subsidiary. For the purpose of a pre-registration examination for medical students it would be necessary to secure an even greater elasticity in the grouping of subjects, and to establish a greater uniformity of standard or of syllabus as required by universities under whose auspices the examination is conducted.

9. Assuming that such a course was intelligently constructed and directed and seriously followed, the student should then at least know how to think, how to read with comprehension and reasonable fluency one language besides his own, and how to express himself, both in speech and in writing, logically and clearly in his own language. He would have been introduced to some great literature, and have some notion of historical sequence and perspective. He would understand scientific method and scientific principles of observation and deduction; and he would have acquired such a knowledge of the main facts or problems of the physical universe and of living organisms as to enable him to pass to the study of the human organism and its environment with interest, intelligence, and profit.

(See paragraphs 21 to 27)

Anatomy and Physiology

10. Anatomy and physiology should be taken paripassu as interrelated subjects and with refrence to their subsequent clinical application, and should be pursued largely in relation to the living body.

11. Instruction should be by means of—

(*a*) Lectures, in which the teaching is not merely through the ear, but through the eye also, use being made of diagrams, pictures, the epidiascope, and skiagrams, and demonstrations by means of the cinematograph.

(*b*) Dissection of the dead-body and the demonstration of dissected specimens.

(*c*) Demonstrations on and examination of the living body.

(*d*) Laboratory practice.

(*e*) Demonstrations in the living subject of abnormal conditions of structure or function.

12. During the course the student should become familiar with the methods of manual examination, and be taught the use of such instruments as the clinical thermometer, the ophthalmoscope, the laryngoscope, the rhinoscope, the otoscope; the estimation of blood pressure; the examination of the blood; and the analysis of seretions.

13. During the course there should be definite consideration of, and instruction in, the following matters or subjects in their relation to human anatomy and physiology and their clinical application:

(a) Minute structure.
(b) Embryology.
(c) The principles of genetics.
(d) Nutrition and growth.
(e) Mental function.
(f) Biophysics and biochemistry.

14. The course of human anatomy and physiology conducted on these lines should occupy not more than five terms.

(See paragraphs 28 to 30)

Clinical Years

15. The term immediately following the completion of this course should be occupied with the study of (a) pharmacology, (b) general pathology and elementary bacteriology, including the principles of asepsis and antisepsis. During this period the student should receive a practical introduction

to the methods of clinical examination, and should attend in the post-mortem room, receiving practical instruction in the conduct of necropsies, and acting as post-mortem clerk in a certain number of cases.

(See paragraph 31)

16. Including the term indicated in para 15, there would be three years and one term of clinical study, the last portion of which would be conducted as subsequently laid down (see para. 20). During the first period of not less than two years and six months there would be continued instruction in applied anatomy and physiology, biochemistry, and biophysics, and in pathology and therapeutics in connexion with the main courses, which would be as follows:

(a) The principles and practice of medicine.
(b) Clinical medicine and attendance on general in-patient and out-patient medical practice, including the holding of a medical clinical clerkship for six months, of which at least three should be in hospital wards.
(c) The principles and practice of surgery.
(d) Clinical surgery and attendance on general surgical in-patient and out-patient surgical practice, including the holding of a surgical dressership for six months, of which at least three should be in hospital wards.
(e) Practical instruction in surgical methods, including mechano-therapeutics.
(f) The principles and practice of obstetrics and gynaecology.
(g) Clinical obstetrics and gynaecology and attendance on such practice for six months, two-thirds of this time being given to midwifery (including ante-natal care, the management of the puerperium, and the care of the newborn infant), and comprising a period of not less than two months spent as a resident pupil in or in connexion with a maternity hospital or wards, at least twenty cases of labour being personally attended under adequate supervision during this period.
(h) Disease in childhood, including child hygiene.

17. As part of the systematic and clinical instruction, but not necessarily as separate courses, should be included.

(a) Instruction in the administration of anaesthetics, with personal administration under supervision in at least ten cases.
(b) Instruction in and attendance on clinical practice in (i) acute infectious diseases, (ii) tuberculosis, (iii) mental abnormalities, (iv) skin diseases, (v) venereal diseases, (vi) diseases of the eye, (vii) diseases of the throat, nose, and ear, (viii) public health, (ix) medical jurisprudence; those subjects being taught as related to general practice.

18. In the clinical period the various specialities should not be pursued beyond the stage at which they may be regarded as being immediately necessary for the claims of general practice, and should be included as integral parts of the general course in medicine, surgery, and obstetrics and gynaecology.

19. In every medical school a scheme should be prepared showing how each department can co-operate in the teaching of the preventive aspects of medicine. Steps should be taken by the authorities of each medical school to put such scheme, when finally approved, into operation at the earliest possible moment.

(See paragraphs 32 to 41).

20. At the end of this period of study an examination (written and clinical) should be passed, but full licence to practise independently would not be granted until satisfactory evidence was produced of further clinical experience under supervision, and of certain further instruction over a period which would normally extend to nine months, and which should in no case be less than six months. This period might be occupied in one or more of the following ways:

(a) In a resident appointment in a teaching or other approved hospital.
(b) As a definitely appointed clinical assistant in an approved hospital or clinic.
(c) As a pupil assistant to an approved general practitioner.
(d) As pupil to an approved medical officer of health.
(e) In regular attendance at hospital practice in a medical school.

Evidence of adequate instruction during this period in the legal and social obligations of the medical practitioner (for example, medical ethics, the duties of the medical practitioner in relation to national health services and social welfare) would be required, and the Final Examination would then be completed by a clinical and oral test relating directly to this further clinical experience.

(See paragraphs 42 to 46).

III. SUBJECTS OF THE CURRICULUM

A. Pre-Registration Subjects

21. The committee has no wish to usurp the functions of the schoolmaster or the university teacher, and realises that in every case the character of the instruction in general education and the basic sciences must, of course, be influenced by the number of pupils who can be properly grouped together, the circumstances and equipment of the institution, the particular abilities of each student, and other relevant factors. In the case of the ordinary scholar who is proposing to take the medical course the suggestions may, however, be permitted that in English the cultivation of good reading and clear and grammatical expression is preferable to the meticulous verbal study of special works; that a knowledge of the classical languages is of value to the student of medicine; that if a choice has to be made between modern languages the importance of German for medical students should not be overlooked; that a reading knowledge of both French and German is desirable; and that the history of the development of social conditions and of science is at least as important as that of politics and literature.

22. No doubt general conditions similar to those which apply to general education apply also to the teaching of the three preliminary science subjects; and teachers of these sciences, whether at school, institute, or university, will in

different circumstances adopt different methods. Provided that the range of the instruction and the educational opportunities afforded are adequate, and that there is also a sufficient standardization of the examination tests to be subsequently applied, the committee recognises that some liberty of method is a virtue rather than a defect.

23. The committee does not suggest that pre-registration studies should be required to be taken at any particular kind of institution, whether secondary school, public school, college, medical school, or university. It is probable that many of the "public schools," commonly so called, either for boys or for girls, are sufficiently equipped for the teaching of physics, chemistry, and biology; that country and municipal secondary schools are equipped for the teaching of physics and chemistry, and approximately one-third of these for the teaching of biology also. Biology is being increasingly regarded as a subject which can well be taught in these schools, and year by year an increasing number of them are making provision for this. It should be remembered that it is the universities themselves which prescribe the nature and standard both of the examination tests and of the syllabus of study, and, further, that the schools from which the pupils enter for examination are usually subject to inspection by the universities concerned. There is also provision for exceptional cases as the universities may exempt from examination or from any part thereof candidates for admission who are able to show that they have followed courses of study and taken other tests which may safely be accepted as equivalent to those formally prescribed; and similarly the General Medical Council is empowered to exempt students in particular circumstances.

24. Broadly, two conflicting views have been expressed as to the nature of the instruction in the basic sciences necessary for medical education.

One view tends to belittle the value of physics, chemistry, and biology taught as pure sciences, and to emphasize rather the acquirement in these spheres of a certain knowledge of facts which are of direct value to the medical student and practitioner. Those who hold this view would be content to teach these sciences in a shortened course to segregated classes of those who are about to enter upon the medical curriculum proper and in relation mainly to the studies which immediately follow.

The other view is that the essential purpose of these preliminary science studies is the training of the student in the scientific method and discipline, in the accurate observation of phenomena, in the collection and correlation of data, in the formation of hypotheses and theories, and in the testing of hypotheses by experiment. Those who hold this view aim at a serious intellectual discipline rather than at the acquirement of a mere smattering of technical knowledge which may be of service in the later studies of the curriculum and in medical practice.

Medicine is becoming increasingly interrelated with the work of the pure scientist (biochemist, biologist, physiologist), and no student can become an effective medical practitioner without a sound understanding of the scientific method. A thoroughly scientific outlook is essential for the diagnosis and treatment of disease by modern methods.

25. The committee is therefore of opinion that the second of the above views should prevail in the early scientific education of those who are to enter on the medical curriculum. In respect of fundamental principles and methods there are not two brands of physics, chemistry, and biology, one for medical students and one for other students, and in this regard the potential medical student should preferably receive his instruction side by side with students preparing for other professions. If, as is suggested should be the case in ordinary circumstances, two years or thereabouts are given to the study of these sciences along with a few other subjects of general education an intellectual equipment and scientific outlook will have been acquired which will enable the student readily to apply these sciences to his own particular field. Such application would, of course, be continually made and taught throughout the medical curriculum proper. Moreover, new applications of science involving different specialist knowledge arise from time to time, and the only safe preparation is thorough grounding in scientific principles and method unaffected by clinical interests and unlimited by specialist demands. In the course indicated chemistry would, and even now often does, include sufficient instruction in the chemistry of the carbon compounds to serve as a foundation for the biochemistry to be taken in the course of physiology or in connexion with subsequent clinical study.

26. It does not follow, however, that there can be no improvements in the way in which these sciences are taught in the schools and elsewhere. It cannot be too strongly reiterated that it is the fundamentals, the under-lying principles, the method, which are important rather than the mere acquisition of a certain number of facts; yet in too many cases it is the latter alone which the student seems to have acquired, and this only temporarily. Of course, general principles cannot be learned without reference to particular facts, and a reasonable equipment of factual knowledge is manifestly essential in the study of every subject.

Further, in selecting the class of facts to be taught in illustration of the principles, the selection might often be more useful, even utilitarian, in view of the medical needs. For example, physics is usually taught either as a branch of fairly advanced mathematics or in particular reference to engineering or industry, and recent tendencies seem to indicate an increase rather than a lessening of this bias. In the teaching both of chemistry and of biology there are signs of some improvement. There are welcome indications that attention to inorganic chemistry (especially the extraction of metals) is less exclusive, and that stress is being more frequently laid on the principles of physical and organic chemistry; but even here the industrial and commercial applications tend to be over-emphasized at the expense of the biological, though in this last field highly satisfactory illustrative material can be presented.

In biology itself teaching tends to persist along the lines of the type system, with special reference to anatomical details, whereas the general characteristics of living organisms, the laws and theories of evolution, genetics, heredity, the nature and action of enzymes, vitamins, hormones, should occupy a much more prominent part in the syllabus. A sound con-

ception of such general principles will enable the student to approach medical studies more from the viewpoint of health than of disease, and to recognize the human body as that of a functioning animal rather than as the container of a disease.

27. Again, as is said in the report of the American Commission on Medical Education, "there is considerable room for improvement in the methods of laboratory teaching. Too much reliance is placed on laboratory work as a method of instruction, and an excessive amount of time is consumed in the details of unimportant and uninforming laboratory experiments. The attempt is made to teach too much in too great detail and in too specialized a manner. The laboratory is used too much as a training in manipulation rather than as a means of illuminating and illustrating the subject-matter and familiarizing the student with some of the general principles and methods." The committee would respectfully commend these observations to the teachers of these science subjects.

B. Anatomy and Physiology.

28. Too great demands are made on the student's time in the course of anatomy and physiology as at present taught. For the medical student human anatomy should be regarded and treated as a study of the living rather than of the dead body. Even so, it should be intimately concerned not merely with structure but with the relation of structure to function, and with occasional reference to cases of impairment of function as manifested clinically. Looked at in this way, the dissection of the human cadaver should occupy a different position from that which it has hitherto held in reference to the teaching of anatomy to the medical student. Dissection by the student of every part of the body is unnecessary. The study and demonstrations of dissections prepared by experts are of great value. Furthermore, both as regards teaching and as regards examination, while the relative importance of different structures or systems should be thoroughly considered, a knowledge of meticulous detail, such as the exact bony attachments of muscles and the relations of the less important arteries, veins, and nerves, should not be required. In such ways a good deal of time would be saved; the student would be freed from the necessity of much laborious memorizing or learning by rote; and anatomy would be made a more living and practical part of medicine.

29. Similarly, as regards physiology, a good deal of time might be saved without essential loss. To some extent the main observations made on the teaching of the preliminary sciences have an application to the teaching of physiology, especially with regard to laboratory work. The student might be released from the need for preparing all his own histological sections, and for preparing and actually carrying out many laboratory experiments. Many experiments, such as those on nerve muscle preparations, involve an expenditure of time which is not justified by their educational value. At this stage of his technical instruction it is clear that the student should not be taught physiology as a pure science, but human physiology, with special reference to his subsequent clinical studies. This being so, suitable members of the clinical staff should be associated with the teaching of the subject, and the plan will be the more effective in proportion as the student has been previously well grounded in genedal biological principles. Moreover, the fact of this grounding will enable the teachers of physiology to include in the course sufficient attention to those special matters mentioned in para. 13 without undue sacrifice of time.

30. To at least three of the matters mentioned among these special subjects—genetics, growth, and mental function—the attention hitherto given has usually been inadequate. The first is almost a new science since the last revision of the medical curriculum; at all events, its development during the last few years has been great. Growth, from both its structural and its functional aspects, has, except with regard to a few very elementary facts, for the most part been almost ignored. Mental function, when considered at all, has been dealt with quite perfunctorily. Yet all these matters are of the utmost importance to medical practitioners, and no proper clinical appreciation of their application either to the preservation or to the restoration of health is possible unless they are sufficiently taught to the medical student during the course of anatomy and physiology. Moreover, attention is now being increasingly called in Governmental reports and memorandums to the lack of knowledge in these spheres shown by medical practitioners generally. The question therefore arises whether it is desirable that some of these special subjects, though taught as an integral part of the course of anatomy and physiology and in due proportion, may not under present conditions require to be undertaken by some qualified lecturer other than the appointed teachers of anatomy and physiology. This seems particularly desirable in reference to genetics and to mental function, where the methods of approach are out of the usual line of the main course. From the systematic lecture side they could probably be dealt with quite shortly, yet sufficiently for the purpose needed.

C. Pharmacology, Pathology, Bacteriology.

31. The position which pharmacology and general pathology with elementary bacteriology should occupy in the curriculum is a matter of considerable difficulty. It has been usual to teach them as main subjects in the session which immediately follows the conclusion of the course in anatomy and physiology, and the committee does not suggest that this arrangement should be disturbed. It is clear, however, that such teaching cannot be adequate unless it is continued throughout the rest of the clinical years, and that it cannot at the stage suggested, be so valuable as it would be if it were associated with a large clinical experience. The content of the subjects dealt with at this stage must therefore be of a general character both as regards the action of drugs, the nature of disease processes, and the appearance and action of micro-organisms.

By their nomenclature the committee distinguishes between materia medica, pharmacology, and therapeutics the first of these subjects as previously taught being omitted from the curriculum altogether and the last being left entirely to the main clinical courses. In connexion with the course of pharmacology there should be included instruction in the writing of prescriptions and in elementary pharmacy.

In particular there can be no doubt that instruction in the post-mortem room and the performance of necropsies would be of greater value at a later stage, but it may be useful, and time seems to make it necessary, that a few of the total number of post-mortem examinations prescribed should be performed during this session. The committee regards it as important that at this stage the student should be immediately taught the principles of asepsis and antisepsis and their application, that he should be given as much opportunity as possible of applying to the detection of abnormal physical signs those methods of examination which he has learned on the healthy body during his course of anatomy and physiology, and that he should be so taught that he will not regard pharmacology, general pathology, and bacteriology as subjects to have done with. It is with this end in view that the committee suggests later that the examination in these subjects, if specially provided for, should not be taken at a less interval than twelve months from passing that in anatomy and physiology.

D. Medicine.

32. With the proviso that the guiding idea that the student's attention should not be focussed on diseases as separate entities but upon the health of the whole human personality requiring restoration and preservation might be more continuously borne in mind, and reserving the subjects of psychological medicine and of physiotherapy for separate consideration, there does not appear to be occasion for serious criticism of the teaching of general medicine and of the special branches usually closely associated with it, as at present conducted in the best medical schools. Two points of real, though perhaps minor, importance may be mentioned. First, there would appear to be need for more abundant opportunity for the student to have actual experience of those minor operative procedures which are regarded as within the province of the physician. Reference may be made to the taking of blood specimens for various purposes, to intravenous medication, to lumbar puncture, and to diagnostic exploration of the serous cavities. These are of great practical importance to the general practitioner and to his patients. Secondly it would be a great advantage if the medical student received as a matter of course some of the instruction at present given only to nurses. There would seem to be no objection to such instruction being given by a member of the nursing staff, whether separately to medical students or to the students and probationer nurses together. It is difficult to see how a practitioner can properly be expected to approve, disapprove, or modify the methods of nurses under his responsibility or supervision in the absence of such knowledge, and as a matter of practical experience this is of considerable importance to the efficiency and success of a general practitioner and to the comfort of his patients.

33. The student should have full opportunities of acquiring skill in the special methods of examining the fundus of the eye, the vocal cords, and the ear. He should also be able to make a complete examination of the urine, an adequate examination of the blood, and a systematic clinical investigation of the nervous system

34. The position with regard to what is called physiotherapy is somewhat analogous to that with regard to a knowledge of nursing, but more difficult. Physical methods of treatment, principally by means of massage and medical gymnastics, electrical treatment, including diathermy, and various baths, have greatly increased in importance of late and it becomes the duty of the general practitioner to order them with discrimination, in an intelligent manner, with full knowledge of their effects and limitations, in the same way as he prescribes drugs, to modify their application as required, and in many cases to supervise or even to direct them. As with nursing, it is not necessary that he should be highly skilled or experienced in the particular attentions or manipulations that are needed, but he certainly cannot usually order the treatment or watch its results intelligently without more knowledge of these methods of treatment than is afforded him at present in the medical school. The matter does not receive proportionate emphasis during the clinical years. It is clear that the teaching of the need for physical methods of treatment, of the occasions on which they should be used, and of their modes of action, is no less important to the student than is the corresponding teaching with regard to drugs given in the course on Pharmacology.

35. Psychological medicine and psychotherapeutics are of even greater importance; indeed, the importance of this aspect of diagnosis and treatment to the general practitioner can scarcely be exaggerated. To him the psychoses are of far less importance than the psychoneuroses, yet it is to the former that the medical student's attention has been predominantly directed. He should certainly be instructed in the early symptoms and general course of the psychoses, and taught how to deal with such cases as they arise. Ordinarily, however, he will not have the responsibility for their continued care and treatment, whereas the psychoneuroses will be continually with him in his daily practice. The difficulty of instruction in this field is threefold. First, complete diagnosis and adequate treatment of a large proportion of the cases occupy a long period of time. Secondly, in many of the cases both diagnosis and treatment need quiet, and the presence of a minimum number of persons, if any beyond the physician himself. Thirdly, the student's general experience of life is not usually such as to enable him to appreciate the various repressions and complexes, with their associated anxieties and fears, which determine the origin and course of such cases. Nevertheless if suitable attention to mental function has been given in the course of physiology, as the committee has suggested, it is not only possible but imperative that a general knowledge of the nature of the psychoneuroses and of the lines on which they should be dealt with, should be taught to the student, with such opportunity for actual experience of patients as circumstances allow. At the same time he should be taught the importance of a definite appreciation of the mental attitude of the patient in the course of every illness.

In this connexion the subject of mental deficiency should be included in the curriculum, at least sufficiently to enable the practitioner to understand the fundamental nature of the condition and to diagnose its main degrees when they are sufficiently marked.

(See also paragraph 41).

E. Surgery.

36. Much criticism has been directed, and perhaps properly, to the teaching of surgery and of those specialities which are usually associated with it. To set out even an outline for a surgical course of the scope here contemplated would be very difficult. The committee, however, regards it as essential that the student should become familiar with the diagnosis and treatment of all the common surgical diseases and injuries, and that he should have practical opportunities of gaining skill in such surgical manipulations as are involved in the treatment of fractures and dislocations and in the actual performance of minor surgical operations. In gaining this experience actual practice in the out-patient department is essential and of high value.

37. With regard to operations certain points may be emphasized. First, an acquaintance with the more common major operations if of importance, but the mere watching of operations in the theatre is largely a waste of time. Secondly, the line between "major" and "minor" is not an exact one, and there are cases coming ordinarily under the latter heading which either from their initial inherent difficulty or because the condition has been allowed to become advanced, pass into the "major" category. Thirdly, it is an essential function of the general practitioner to deal with septic conditions in their earlier stages; indeed, this is his principal opportunity and value in the sphere of preventive surgery. It is therefore absolutely imperative that every student should have the fullest instruction in, and actual experience of dealing surgically with, such conditions as whitlow, carbuncle, and cellulitis. It is not too much to say that if he has a thorough understanding of these conditions and some actual practice in the proper use of the knife for them it will not be difficult for him to apply this knowledge and experience in many other surgical directions.

38. Lastly, with regard to certain major operations which should come fully within the surgical course, it is not intended to imply that every practitioner will ordinarily perform these. Whether he will or will not must depend partly on his own ability and inclination and partly on the conditions of his practice. Circumstances may occur in any practice making it imperative that certain operations of this character should be immediately undertaken for the safety of the patient; and still more frequently there are difficulties of distance, finance, or domestic circumstances which make it greatly convenient that the general practitioner should perform them. Many such operations are, in fact, frequently performed by such practitioners in cottage hospitals, nursing homes, or at home; and if any practitioner feels that he may properly cultivate his skill in this direction, and wishes to do so, it is reasonable that his medical course should have afforded him the basis on which he can build according to his opportunities; it must, however, be recognized that such extensive practice of surgical operations requires special training and apprenticeship.

39. The administration of anaesthetics becomes more and more a specialty; but as is already laid down every student should be taught not merely in theory but by actual practice the best and safest way of administering nitrous oxide gas ether, and chloroform, together with analgesic drugs in connection therewith.

F. Obstetrics and Gynaecology.

40. The teaching of obstetrics and gynaecology does not require much further comment. The regulations of the General Medical Council in this regard have recently been strengthened and revised, and the committee has adopted them in their new form (see para. 16). If they are fully observed in the letter and in the spirit, the teaching of this branch of medicine must be greatly improved and may be adequate. The provision of sufficient material for the practical teaching of obstetrics to medical students is a very important matter. It is an immediate difficulty which is possibly by way of being gradually overcome. This question is not directly the business of this committee, and the same is true of the proper use of ante-natal clinics. It should be said, however, quite definitely that ante-natal examination and care is within the province of the general practitioner, and it should be the business of his medical school to see that he is thoroughly prepared to perform his duties in this sphere. Hitherto this preparation has often been defective.

41. The same remark may be made with regard to infant hygiene and child welfare. There has been some dispute as to whether this should be comprised in the department of obstetrics or that of medicine. The committee has placed it with the latter, and this seems the more appropriate. In any case, it is one of the subjects most essential for the general practitioner, and much more thorough instruction, theoretical and practical, than has been customary is imperative, use being made of suitable infant welfare centres.

G. Final Clinical Period.

42. The final clinical period outlined in para. 20 is not intended to be entered upon until the student has passed the main part (Part I) of his Final Examination. Though the committee is fully convinced of the great value of this period of responsible clinical experience under supervision, it cannot but realize that there may be considerable difficulties in giving practical effect to the proposals therein advanced. The difficulties may perhaps be grouped under three headings: (1) the sufficiency, or otherwise, of the openings available for the student, (2) the meaning of the word "approved" and the method of securing approval, and (3) the status of the body or person with whom the student is placed and of the student himself during this period.

43. There are undoubtedly medical schools within the Empire where it should be impossible to provide opportunities under alternatives (a) to (d) of para 20 for more than a small proportion of the students; but it is believed that in connexion with most, or even all, of the schools in Great Britain, and in many of those elsewhere, suitable provision for the great majority of students could be secured. It should be possible to utilize for this purpose not only the hospitals directly attached to the medical schools, but also the local authority hospitals and special hospitals of the neighbourhood, many large provincial voluntary hospitals with no medical school attached but admirably staffed for this purpose, and municipal and county clinics for school children, for maternity and infant welfare, and for other public health clinical services. In some areas, at least, it would be possible to secure, in addition,

suitable experience with private practitioners or as pupils with a medical officer of health. No doubt, some of these opportunities would be to some extent limited by the necessity of maintaining sufficient connexion with the medical school or recognized hospital to ensure, directly or indirectly, instruction in the legal and social obligations of the medical practitioner (for example, medical ethics, the duties of the medical practitioner in relation to national health service and social welfare), as well as regular clinical work. But difficulties in this direction should not be insuperable.

. "Approved" in this connexion indicates approval by the dean of the medical school or the director (or board) of medical studies, after considering in each case the opportunities both of clinical experience and of instruction, that would be afforded; and it would probably be wise to lay down that no medical officer of health could be approved for this purpose unless his local authority made provision for both a school medical service and a maternity and infant welfare service, had right of access to a convenient infectious diseases hospital.

45. If a student, with the approval of the responsible authorities of his school, passes for instruction and supervision during this final clinical period to (1) a "non-teaching" hospital, (2) a general practitioner, or (3) a medical officer of health, such person or body (or some member of the staff of such body) will become, *ipso facto*, a part of the teaching staff of the medical school, and so will be entitled to some financial recognition of the services rendered. In return such teacher will be responsible for affording the student opportunities for experience and additional instruction and for the exercise of such responsibilities as the law allows him to exercise while he is still not a registered medical practitioner. Indeed, it is quite possible that, although he is still in *statu pupillari*, the fact that he has all but completed his medical course and has passed the main part of his Final Examination would justify the General Medical Council in affording him some definite status in relation for example, to the Warning Notice regarding "covering". It would be unwise to suggest that the law should permit him to sign official certificates or perform certain other duties which can only be done by a registered medical practitioner. Although in a somewhat wider field, his position would not differ materially from that of the student who at an earlier stage of the course administers an anaesthetic or conducts a maternity case.

46. It may be that one or other of the difficulties above suggested will at least for some time cause alternative (e) to be more widely selected for the student than the committee contemplates will ultimately be the case. The alternative however, should not be adopted at the mere choice of the student. The circumstances of its adoption would usually be either the existence of some difficulty in arranging for one or other of courses (a) to (d) or the definite opinion of the dean of the medical school or the director (or the board) of the medical studies that alternative (e) would be the most suitable course in the case of individual students. If this course is adopted the hospital practice should include arrangements which offer the student opportunities for some degree of personal responsibility for the clinical care of patients, and such opportunities might well be found not only in the medical session but also during vacation.

IV. EXAMINATIONS

A. Times

47. The examinations which the student would be required to pass are as follows:

(a) *Pre-registration*: Not before attaining the age of 17 years.

(b) *Anatomy and Physiology*: Not earlier than eighteen months after registration.

(c) *Pharmacology, General Pathology, and Elementary Bacteriology*: Not earlier than twelve months after passing the examination in anatomy and physiology.

(d) *Final Examination, Part I*: Not earlier than forty-eight months after registration nor earlier than thirty months after passing the examination in anatomy and physiology.

Part II: Not earlier than fifty-seven months after registration nor earlier than six months after passing Part I. Provided that,

(1) In each case the course of instruction laid down in the curriculum relative to the period of study has been completed.

(2) The special examination in pharmacology, general pathology and elementary bacteriology need not be held by examining bodies which include questions on these subjects in their Final Examination

B. Methods

48. In general, as to the method of conducting examinations and assessing the results, the committee is in agreement with the recommendations of the General Medical Council relating to professional examinations and set out in the appendix to this report. Certain alterations, however, would be required to bring these into harmony with suggestions of the present report. These are:

(1) *In Recommendation* 1: The words "(including the pre-registration examination)" should be inserted after "earlier subjects."

(2) *In Recommendation* 7: The words "Part II of" should be inserted before "the Final Examination".

(3) *In Recommendation* 8: The word "completed" should be substituted for the word "passed," and the words "with the exception..... gynaecology" omitted.

(Alternatively, and better, if the times of examinations are laid down as in the preceding paragraph, Recommendations 7 and 8 should be omitted altogether; they are the only two which refer to the time of examination and not to the method).

(4) There should be added to the Recommendations "Part II of the Final Examination should consist of a clinical and oral test relating directly to the candidate's clinical experience since passing Part I."

49. The committee is of opinion that particular attention should be drawn to Recommendation 19, and that practical effect should be given to this in assessing results. This does not mean that the general opinion of those who have taught the student as to his suitability for passing should be relied upon, but the results of actual "internal" examination tests might be taken into account.

50. It has been well said that examinations are made for studies and not studies for examinations, and it may be fairly claimed that, in general, the oral and clinical tests to which the medical student is subjected in this country are within the ambit of what the examiners know to have been the range of the systematic and practical teaching the candidate has received. Departures from this rule, however, are not unknown, and they exercise a disturbing influence on the work of the student and on the repute of the particular examination affected. These exceptions are usually due to the special interest which an examiner may have in a particular aspect of his subject, and it is the duty of his colleague or colleagues to ensure that special interest may not, in fairness to the candidates, unduly affect the ordinary standard of the examination.

The committee is of opinion that not only should there be integration in the study and practice of subjects in the curriculum which have become too departmental, but also in the examination tests imposed, and to this end it would welcome any steps which might be taken to secure co-ordination in the actual conduct of the examinations.

The confident belief by the student that his knowledge will be broadly and fairly tested by his examiners cannot but produce good results in the manner and measure of his studies.

V. THE ORGANIZATION OF STUDIES

51. As has already been shown in the course of this report, the committee is well aware that the problems of medical education have been by no means exhausted when a schedule has been constructed of the subjects which should be included in the curriculum. The committee has already referred incidentally to other aspects, and to one such it may be allowed a special reference.

It is not an overstatement to say that inquiry into the psychology of learning has revolutionized ideas on education during recent times. It is now recognized that the student should be regarded as a partner in the process of learning rather than as a mere passive recipient of "facts"; also that it is the primary duty of the teacher to teach the student how to learn rather than to require him to memorize. In the past it has been readily assumed that examination failures and failures in medical practice are solely failures on the part of the student and the practitioner, they may very well result from defects in the methods employed in his training.

52. Such considerations have a bearing on the technique of medical teaching. It is necessary to teach medical students in class and by lecture; under these conditions they should not be left in the dark as to the plan which is being followed by the teacher of a subject, as to what are the outstanding problems with which the subject deals, and as to the place which these problems occupy in the general scheme of medical learning. If a student understands these matters and is so shown perspective he will submit to the drill of class teaching with less fatigue and without loss of interest.

It is not difficult in medicine to sustain the interest of the student and to give him motive at all stages, but unless this is done he may very well be mentally burnt out by the complexity of the detail which he is set to memorize, and leave his school with all keenness for extending his knowledge extinguished. The ends at which medicine, preventive and remedial, aims can and should be kept before him, and they can readily be illustrated by the results achieved in the various branches of medicine and surgery.

53. Self-education can also be readily aided in medicine if teaching is presented to the student in the form of problems which have been worked out, and if he is given problems to work out for himself at all stages. The latter is most necessary during the clinical period, and ample time should be given to him for this purpose. It is probably the most valuable of all preparations for the work in which the student will be occupied after his graduation. Learning of this kind needs also time for literary consultation and museum study, in regard to which the student needs not only opportunity, but also guidance. All medical schools should somewhere furnish senior students with opportunities for acquiring educational methods by acting as student demonstrators.

54. In every medical school regard is, no doubt, given to these aspects of the problem of medical education, but they are aspects which, in the opinion of the committee, need constant supervision.

55. No matter how admirably devised any time-table of medical classes may be, its administrators are always confronted with two possible and practical difficulties. First, the staffs of hospitals are selected for reasons which usually take into account clinical rather than teaching ability. Secondly, in those clinical schools where the honorary staffs do not attend daily the difficulties of grafting modern methods of teaching on to the medical curriculum are very great. A reconstruction of, and an increase in, existing hospital staffs would be to the advantage of everybody concerned with both hospital and school.

Boards of Studies

56. In connexion with all medical schools there should be established boards of studies not only for medicine and surgery, but for the other subjects of the curriculum and for the curriculum as a whole. For example, the board of anatomy and physiology might consist of the professors of the subjects, the full-time university assistants of the departments, one surgical representative from each of any associated clinical schools, one medical representative from each hospital, and a similar representation for other subjects, such as midwifery. This board would arrange the instruction in anatomy and physiology to be given throughout the whole course, whether in the special departments or in the hospitals, determine the teachers to take charge of the several courses, co-operate with the medicine, surgery, and midwifery boards, and systematize and co-ordinate instruction for undergraduates and graduates both in the university and in the associated hospitals. Hospital instruction in applied anatomy and physiology would thus be shared by every member of the board.

MEDICAL ADMINISTRATION

57. In the British system of administration of medical schools it is usually assumed that some one busy with his professional research, or other university duty, can, almost

at a moment's notice, and without any previous training or experience, assume an administrative position in a complex organization. It is further assumed that he can do so in addition to his work as a scientist, clinician, or educator. The position is untenable.

The dean of a medical faculty or large medical school has, under modern conditions, a highly responsible and complex task. If he is to secure the proper order and working of the educational scheme and to afford counsel and supervision to students he can have little time for other occupations, and in at least the larger enterprises the duties may demand a whole-time service, with a corresponding measure of financial recognition. (Supplement to the *British Medical Journal*: April 21, 1934: pp. 192—199).

Professional Education Resolutions of the G. M. C.

Proposed Amendments

We print below the draft resolutions of the General Medical Council in regard to professional education as amended at the November session in accordance with the second interim of the Curriculum Committee.

The Curriculum Committee was appointed as a special committee of the Council on June 2nd, 1934. On May 31st, 1935, the Council resolved that the first report from the Committee should be received and circulated (with the draft of revised resolutions in regard to professional education appended to it) to the licensing bodies and to the deans of medical schools for their observations. On November 29th, 1935, the Committee presented to the Council a second report, incorporating its suggestions in the following amended draft of revised resolutions.

Registration

Every medical student at the commencement of his studies should be registered in the Medical Students' Register in the manner and under the conditions prescribed by the Council.

Pre-registration Examinations

Before registration as a student or commencement of the medical curriculum proper every person shall be required to pass, in addition to an approved preliminary examination in general education, an examination or examinations conducted or recognized by one of the licensing bodies, and comprising the following subjects: (1) One or two subjects of general education at an approved standard. (2) Chemistry (theoretical and practical). The elementary principles of the chemical combination of elements, including carbon. (3) Physics (theoretical and practical). The elementary mechanics of solids and fluids, the elements of heat, light, sound, electricity, and magnetism. (4) Elements of general biology. A course of instruction, including practical work, in fundamental facts of vegetable and animal structure, life history, and function; and an introduction to the study of embryology.

The examination in the subject of biology may be taken after registration as a student in the period of study of the professional scientific subjects.

Medical Curriculum

With regard to the course of study and examinations which persons desirous of qualifying for the medical profession shall go through in order that they may become possessed of the knowledge and skill requisite for the efficient practice of medicine, surgery, and midwifery, the Council recommend as follows namely:

The period of professional study, between the date of registration as a medical student and the date of the final examination for any diploma which entitles its holder to be registered under the Medical Acts, should be a period of certified study during not less than five academic years. The first two years should be devoted to the study of professional scientific subjects with an introduction to clinical subjects. The last three years should be devoted to the study of the clinical subjects together with the clinical application of the professional scientific subjects.

Throughout the whole period of study the attention of the student should be directed by his teachers (a) to the importance of the measures by which normal health may be assessed and maintained, (b) to the principles and practice of the prevention of disease.

In every course of professional study, and in the examinations, the following subjects should be included:

Period of Study of the Professional Scientific Subject

(First and Second Years)

Human Anatomy and Human Physiology—These courses should include:

1. Dissection of the entire cadaver.
2. Anatomy of the living body.
3. Elements of human embryology.
4. Histology, the elements of cytology.
5. The elements of genetics.

Note.—This subject may be taken with biology.

6. The principles of general physiology, the chemistry and physics of bodily functions studied as far as possible in the human subjects.

7. Instruction in normal reactions of the body to injury and infection as an introduction to general pathology and bacteriology.

8. Elements of normal psychology.

Instruction, illustrative of that given in anatomy and physiology and introductory to later studies, should be given in the second year in the following subjects, the amount of time to be allotted in them not to exceed one third of the total time available in that year:

Elements of the Methods of Clinical Examination, including physical signs, the use of the stethoscope,

ophthalmoscope, etc., and the examination of body fluids (with demonstrations on living subjects, normal and abnormal).

An Introduction to Pharmacology.

Note.—It is recommended that students should not pass to the period of clinical studies until they have satisfied the examiners in the subjects of the first and second years.

Period of Clinical Studies

This period occupies the third, fourth, and fifth years of the medical curriculum proper. These should be calendar years, during which clinical instruction should be continuous. A minimum period of three years should in every case be given to clinical study in an approved hospital after the completion by the student of the professional examinations held at the close of the second year of the medical curriculum proper.

Medicine, including:

1. Systematic instruction in the principles and practice of medicine.

2. A medical clinical clerkship in the hospital wards for a period of six months.

3. A continuous period of not less than one month in residence in hospital or conveniently near by, attached to medical wards.

4. A clinical clerkship for a period of not less than one month in a children's ward or hospital.

5. Regular attendance in a medical out-patient or equivalent department for a period of three months.

6. Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies, to be carried out as arranged by the teachers of anatomy and physiology and of the clinical subjects.

7. Instructions in methods of treatment, including:
   (a) dietetics;
   (b) therapeutics and prescribing;
   (c) physiotherapy;
   (d) principles of nursing.

8. Instructions in the following branches of medicine:
   (a) disease in infancy and childhood, and child welfare;
   (b) acute infectious diseases;
   (c) tuberculosis;
   (d) psychology and mental disease and deficiency;
   (e) diseases of the skin;
   (f) radiology in its application to medicine;
   (g) theory and practice of vaccination.

   Note.—Instruction in these branches of medicine should be directed to the attainment of sufficient knowledge to ensure familiarity with common conditions, their recognition and treatment.

Surgery, including:

1. Systematic instruction in the principles and practice of surgery.

2. A surgical dressership in the hospital wards for a period of six months.

   Note.—During his period of surgical dressership a student should spend the greater part of his time at the bedside and in the out-patient department; and he should not be required to attend in the operating theatre unnecessarily.

3. A continuous period of not less than one month in residence in hospital or conveniently near by, attached to surgical wards.

4. Regular attendance in a surgical out-patient or equivalent department for a period of three months.

5. Practical instruction in surgical methods, including physiotherapy.

6. Practical instruction in minor operative surgery on the living.

7. Instruction in the administration of anaesthetics, the candidate being certified to have administered anaesthetics on at least ten occasions.

8. A course of instruction in operative surgery.

9. Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies to be carried out as arranged by the teachers of anatomy and of the clinical subjects.

10. Instruction in the following branches of surgery; (*a*) disease in infancy and childhood; (*b*) diseases of the eye and principles of refraction; (*c*) diseases of the ear, nose, and throat; (*d*) radiology in its application to surgery; (*e*) venereal diseases; (f) orthopaedics; (g) dental diseases.

   Note.—Instruction in these branches of surgery should be directed to the attainment of sufficient knowledge to ensure familiarity with common conditions, their recognition and treatment.

Midwifery, Infant Hygiene, and Diseases of Women, including:

1. Systematic instruction in the principles and practice of midwifery and gynaecology, including the applied anatomy and physiology of pregnancy and labour.

2. Lectures and demonstrations in clinical midwifery, infant hygiene and gynaecology, and attendance on the practice of a maternity hospital or of the maternity ward of a general hospital, and on in-patient and out-patient gynaecological practice, for a period of six months, this period to be subsequent to the medical clinical clerkship and the surgical dressership. During this period the hours of clinical instruction should be so allotted that at least two-thirds are given to midwifery, including ante-natal care and the hygiene of infants.

3. Of this period of clinical instruction not less than two months should be spent as a resident pupil either in a maternity hospital or in a hostel attached to a maternity hospital or the maternity wards of a general hospital, and these two months should be devoted exclusively to instruction in midwifery and in the hygiene of infants. The student should during these two months attend at least twenty cases of labour under proper supervision.

4. Throughout the six months the student should receive practical instruction in the wards and out-patient department of the maternity hospital in the principles of: (*a*) ante-natal and post-natal care; (*b*) the management of the puerperium; (*c*) the care of the newborn infant.

A certificate of having attended twenty cases of labour should be signed by a responsible medical officer on the staff of the hospital, and should state: (*i*) that the student has personally attended each case during the course of labour, making the necessary abdominal and other examinations under the supervision of the certifying officer, who should describe his official position; (*ii*) that the first five at least of the twenty cases were delivered by the student in the lying-in hospital or ward; (*iii*) that satisfactory written histories of the cases attended, including when possible ante-natal and post-natal observations, were presented by the student and initialled by the supervising officer.

Pathology and Bacteriology.—Courses of instruction throughout the period of clinical studies in: (1) general and special pathology (functional and structural) and morbid anatomy; (2) clinical and chemical pathology; (3) general and clinical bacteriology; and (4) immunology and immunization. Each student should be required to have received practical instruction in the conduct of autopsies, and to have acted as a post-mortem clerk in at least ten cases.

A Course in Pharmacology and Materia Medica, including practical pharmacy.

Hygiene and Public Health.—Instruction in these subjects should be given during the later stages of the period of clinical studies.

Forensic Medicine.—Instruction in this subject and its application to practice should be given during the later stages of the period of clinical studies.

Legal and Ethical Obligations of Registered Medical Practitioners.—Instruction should be given during the later stages of the period of clinical studies, by some person having practical knowledge of the subject, on the statutory obligations of registered medical practitioners under the National Health Insurance Acts and other Acts of Parliament and on the principles of medical ethics. Attention should be called to all Notices on these subjects issued by the General Medical Council.—(Supplement to the *British Medical Journal*: Dec. 14th, 1935: pp. 268—269).

ACKNOWLEDGMENT

Books received for Review:—

1. Text Book of Midwifery in the Tropics (Green Armytage & Dutta), Butterworth & Co. (India) Ltd., Avenue House, Calcutta.

2. Materia Medica—The Medical Publishers, 44, Kailash Bose Street, Calcutta.

3. Post-Graduate Surgery Vol. II. By Rodney Maingot. Butterworth & Co. (India) Ltd., Avenue House, Calcutta.

4. The Practitioners Library of Medicine & Surgery Vol. X. (Dermatology & Syphilogy)—Butterworth & Co. (India) Ltd., Avenue House, Calcutta.